



# Geographic Information System

## Spatial Interpolation Lab Practice

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National Taiwan Normal University



# Outline

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- XY Table To Point
- Set Symbology for Airbnb Listings
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- Create 250m/1500m/2500m Fishnet
- Spatial Join for Counting Number of Airbnb Listings
- Symbology – Grid 250m/1500m/2500m
- MAUP Observation

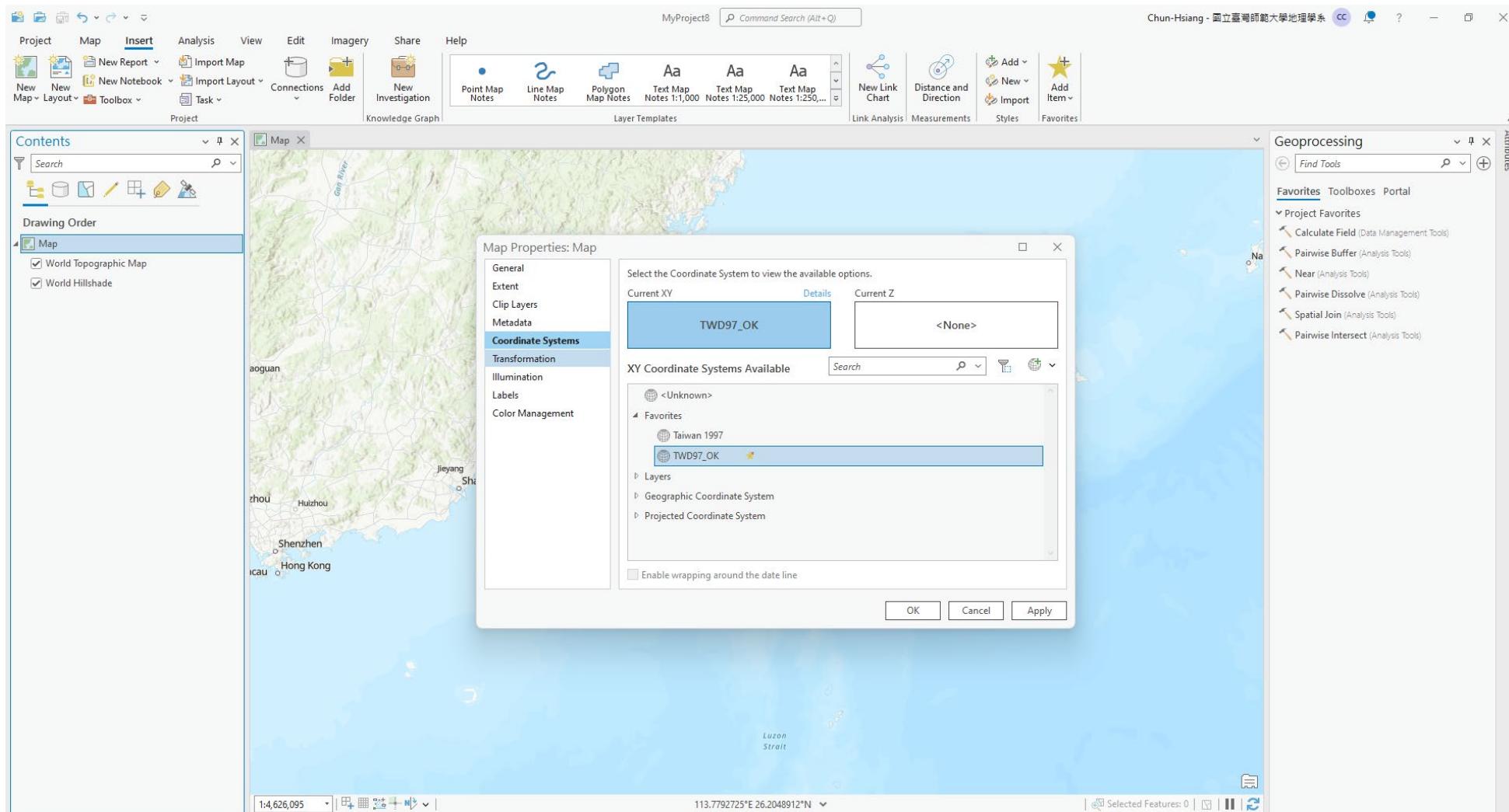


# Objectives

- Use four different spatial interpolation method to understand the spatial distribution of Airbnb listing price.
- Use create fishnet to generate 250m, 1500m, and 2500m of grid to observe the MAUP effect by the number of Airbnb listing.



# Set PCS and Feature Dataset



# Add Airbnb Listing Data

The screenshot shows the ArcGIS Pro application interface. The top menu bar includes Project, Map, Insert, Analysis, View, Edit, Imagery, Share, Help, Table, and Standalone Table. The View tab is selected. The Catalog pane on the right shows a project named 'MyProject8' containing various geodatabases, toolboxes, and log files. A table named 'listings\_.csv' is selected in the Catalog pane. The main workspace displays a map of Taiwan and surrounding regions, with several locations labeled: Taipei, Hsinchu City, Taichung City, Tainan City, Kaohsiung, Xiamen, Quanzhou, Zhangzhou, Meizhou, Chaozhou, Jieyang, Shantou, and Yushan National Park. A table window titled 'listings\_.csv' is open at the bottom, showing a list of Airbnb listings with columns: id, name, host\_id, host\_name, neighbourhood\_group, neighbourhood, latitude, longitude, room\_type, price, minimum\_nights, number\_of\_reviews, last\_review, and reviews. The first few rows of data are:

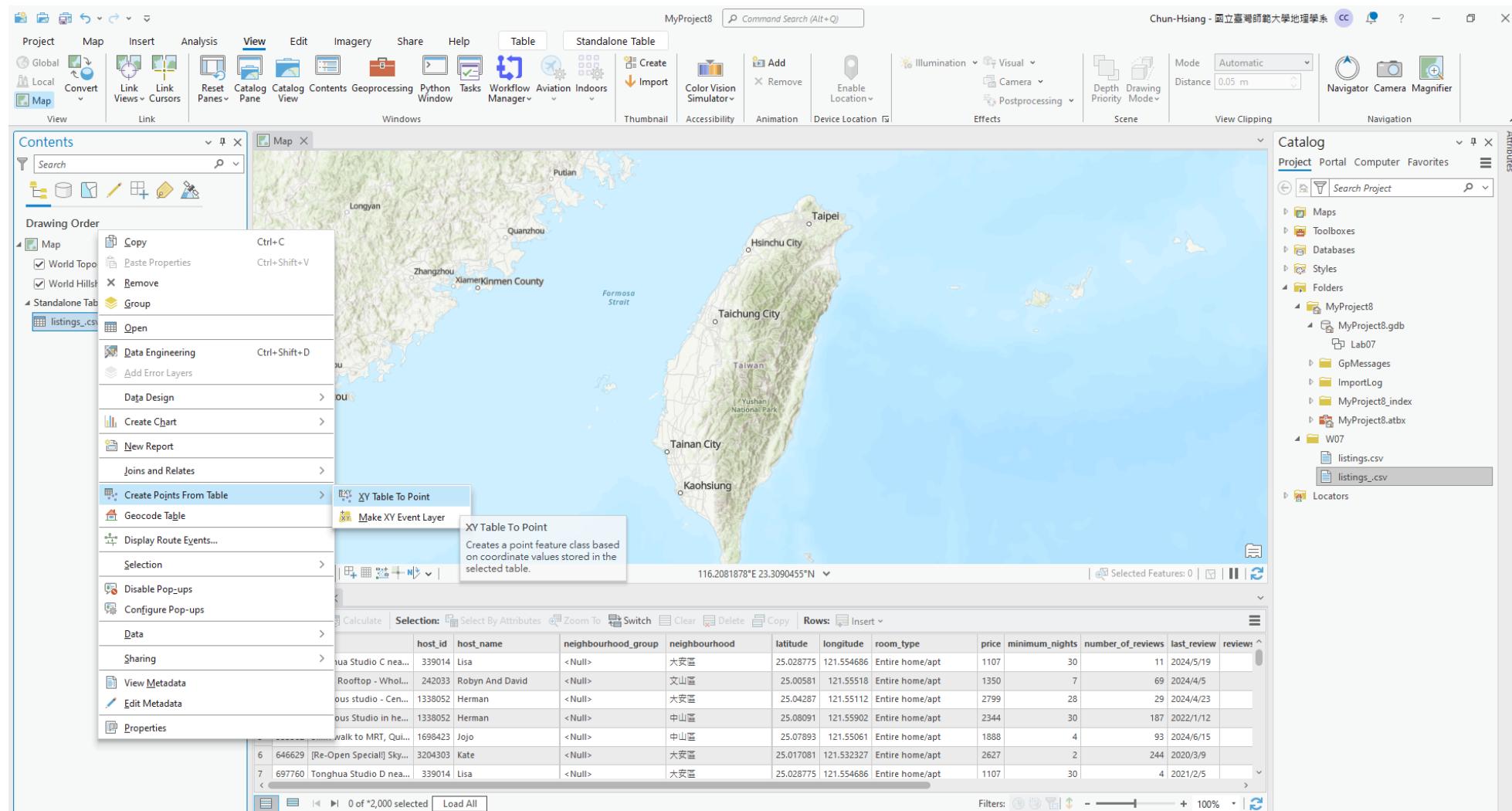
	id	name	host_id	host_name	neighbourhood_group	neighbourhood	latitude	longitude	room_type	price	minimum_nights	number_of_reviews	last_review	reviews
1	68398	Tonghua Studio C nea...	339014	Lisa	<Null>	大安區	25.028775	121.554686	Entire home/apt	1107	30	11	2024/5/19	
2	271733	Taipei Rooftop - Whol...	242033	Robyn And David	<Null>	文山區	25.00581	121.551518	Entire home/apt	1350	7	69	2024/4/5	
3	289296	Fabulous studio - Cen...	1338052	Herman	<Null>	大安區	25.04287	121.55112	Entire home/apt	2799	28	29	2024/4/23	
4	289298	Fabulous Studio in he...	1338052	Herman	<Null>	中山區	25.08091	121.55902	Entire home/apt	2344	30	187	2022/1/12	
5	333362	3min walk to MRT, Qui...	1698423	Jojo	<Null>	中山區	25.07893	121.55061	Entire home/apt	1888	4	93	2024/6/15	
6	646629	[Re-Open Special!] Sky...	3204303	Kate	<Null>	大安區	25.017081	121.523237	Entire home/apt	2627	2	244	2020/3/9	
7	697760	Tonghua Studio D nea...	339014	Lisa	<Null>	大安區	25.028775	121.554686	Entire home/apt	1107	30	4	2021/2/5	
8	718493	簡樸溫馨 無日租   暖氣...	3705836	Gordon	<Null>	內湖區	25.0692	121.58582	Entire home/apt	2679	14	91	2024/5/27	
9	761561	Studio with kitchen n...	4014285	Pei	<Null>	中正區	25.02463	121.52318	Entire home/apt	2279	5	36	2024/6/25	
10	837546	海婆婆TPEshort rent...	4377110	Alice	<Null>	內湖區	25.08353	121.56432	Private room	2009	8	3	2018/1/1	
11	837558	HIPOPO TPE short rent...	4377110	Alice	<Null>	內湖區	25.08353	121.56499	Private room	1907	7	9	2022/8/24	
12	855470	HIPOPO TPE short rent...	4377110	Alice	<Null>	內湖區	25.08374	121.56374	Private room	1907	30	1	2019/4/14	
13	858235	海婆婆短租G房	4377110	Alice	<Null>	內湖區	25.08347	121.56491	Private room	1730	7	13	2024/1/4	

# XY Table To Point for Airbnb Listing Data

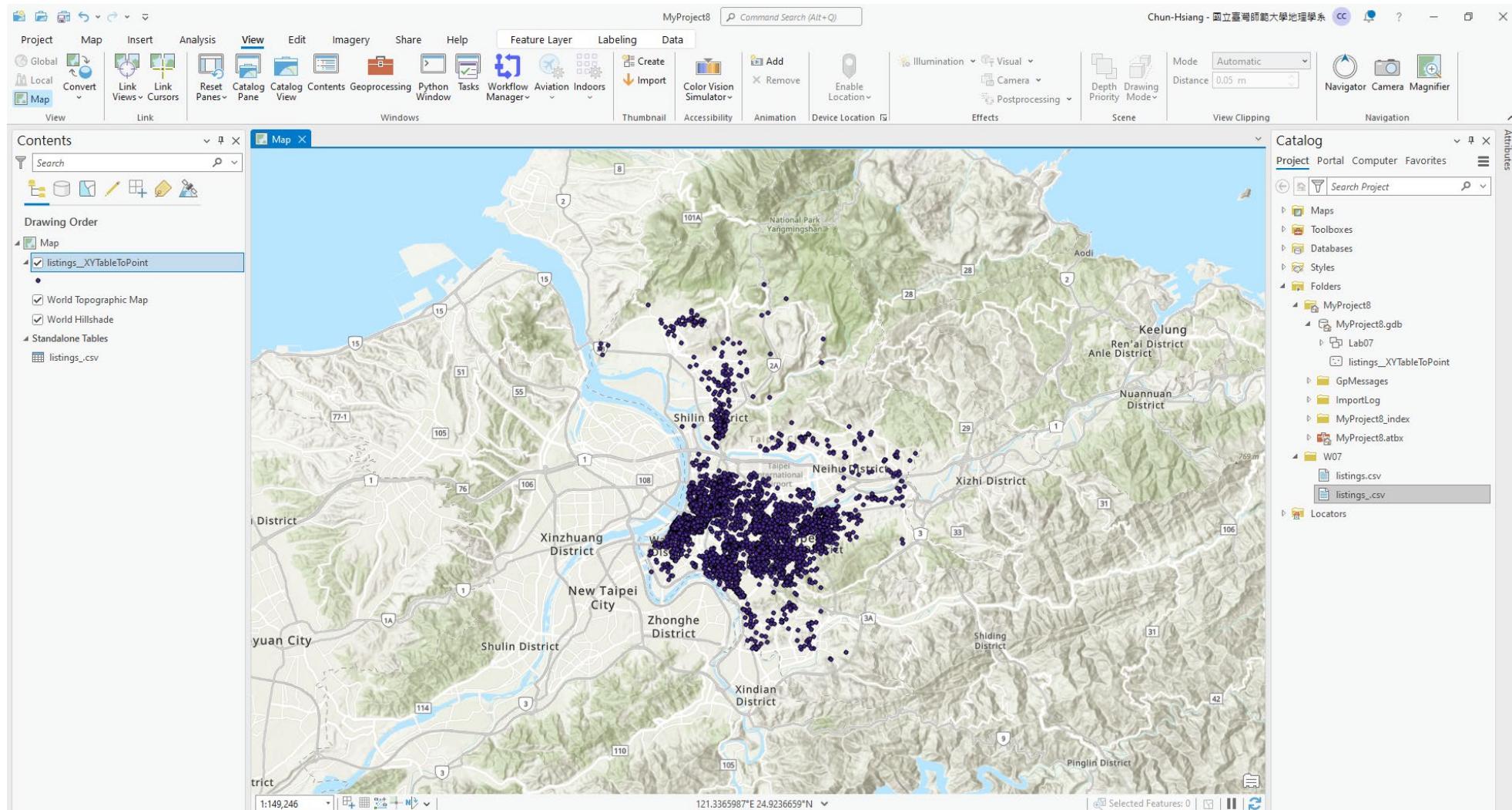
The screenshot shows the ArcGIS Pro application interface with the following details:

- Toolbar:** Standard ArcGIS Pro toolbar with various tools like Project, Map, Insert, Analysis, View, Edit, Imagery, Share, Help, Table, Standalone Table, Create, Import, Color Vision Simulator, Accessibility, Animation, Device Location, Effects, Scene, View Clipping, and Navigation.
- Contents Panel:** Shows a map of Taiwan and surrounding areas. A context menu is open over the map, with the "XY Table To Point" option highlighted.
- Catalog Panel:** Displays the project structure under "MyProject8". It includes "Maps", "Toolboxes", "Databases", "Styles", "Folders" (with "MyProject8" expanded), "W07" (with "listings.csv" selected), and "Locators".
- Data Table:** A table titled "listings\_csv" is displayed in the foreground, showing columns such as host\_id, host\_name, neighbourhood\_group, neighbourhood, latitude, longitude, room\_type, price, minimum\_nights, number\_of\_reviews, last\_review, and reviews. The table contains approximately 2,000 rows of Airbnb listing data.
- XY Table To Point Tool Description:** A tooltip for the "XY Table To Point" tool is visible, stating: "Creates a point feature class based on coordinate values stored in the selected table."

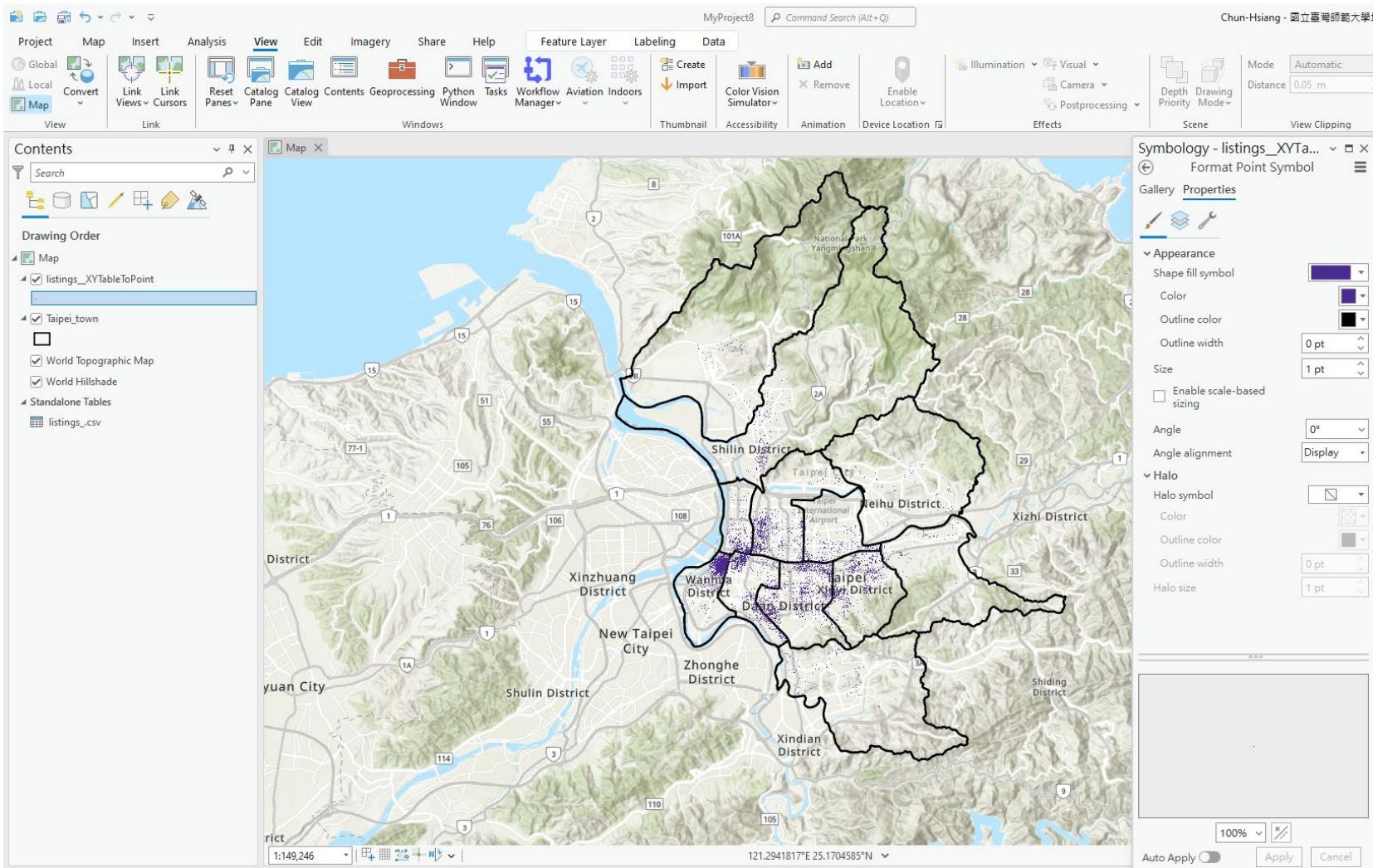
# XY Table To Point for Airbnb Listing Data



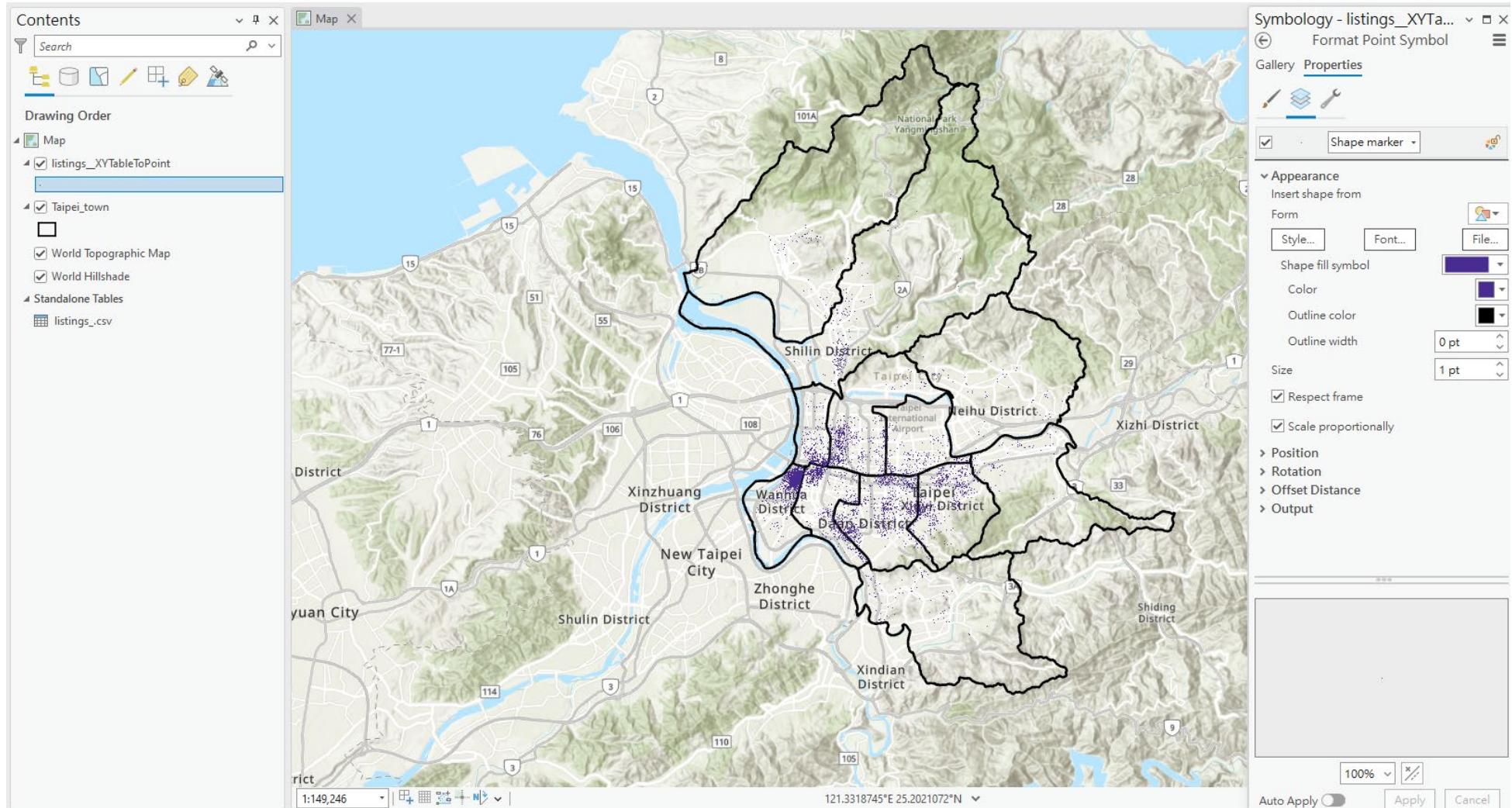
# XY Table To Point for Airbnb Listing Data



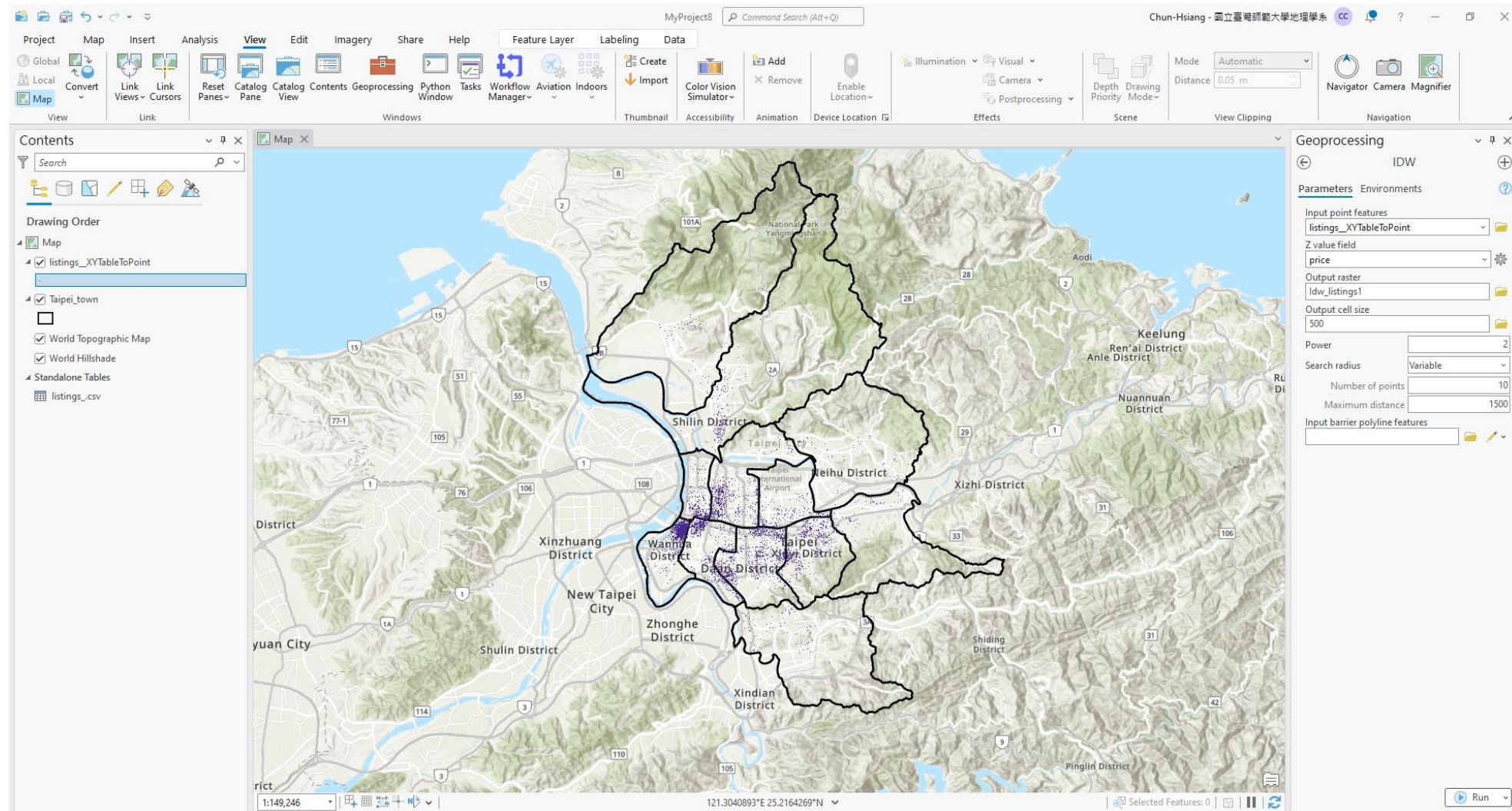
# Set Symbology for Airbnb Listings



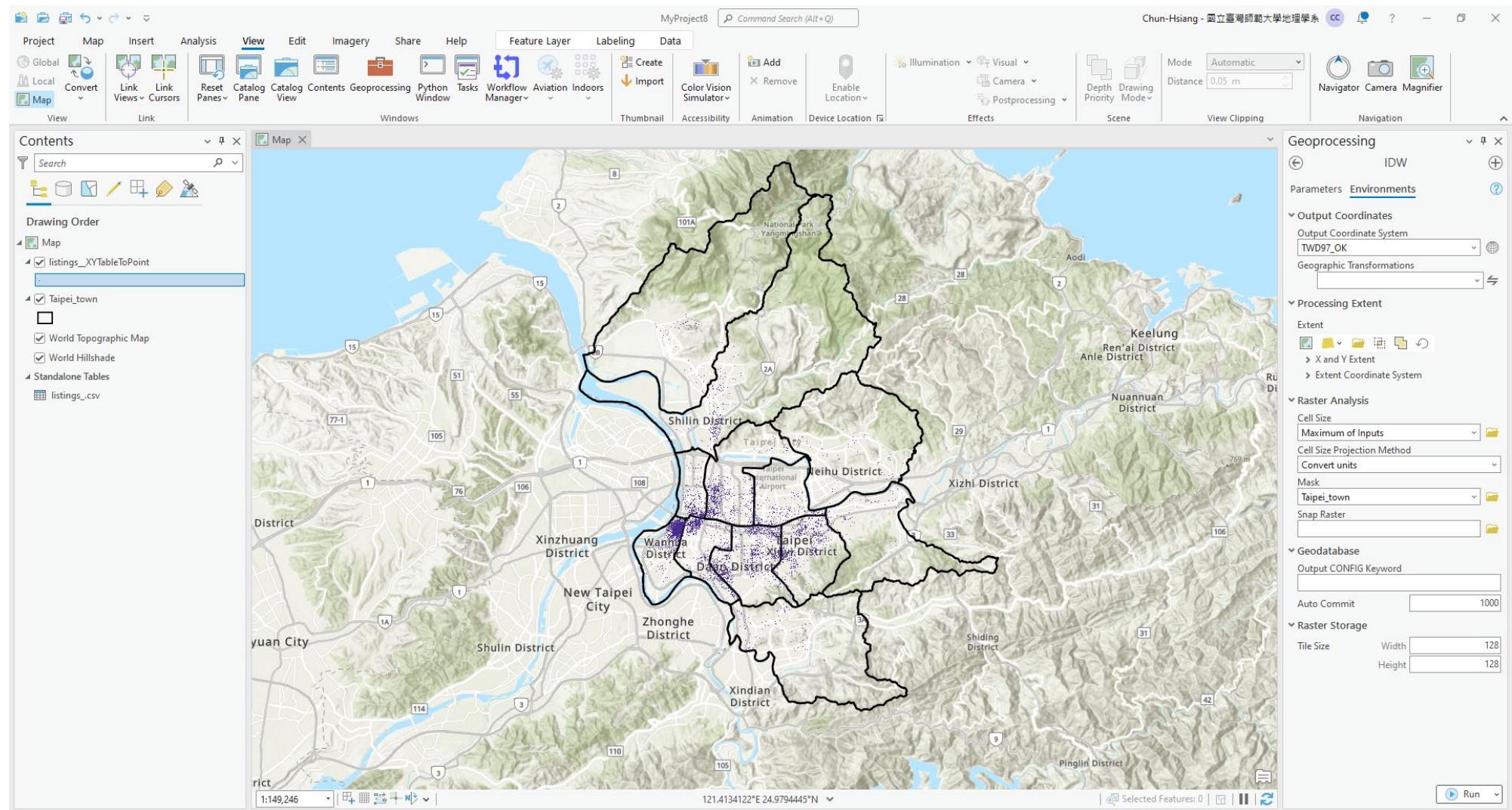
# Set Symbology for Airbnb Listings



# IDW

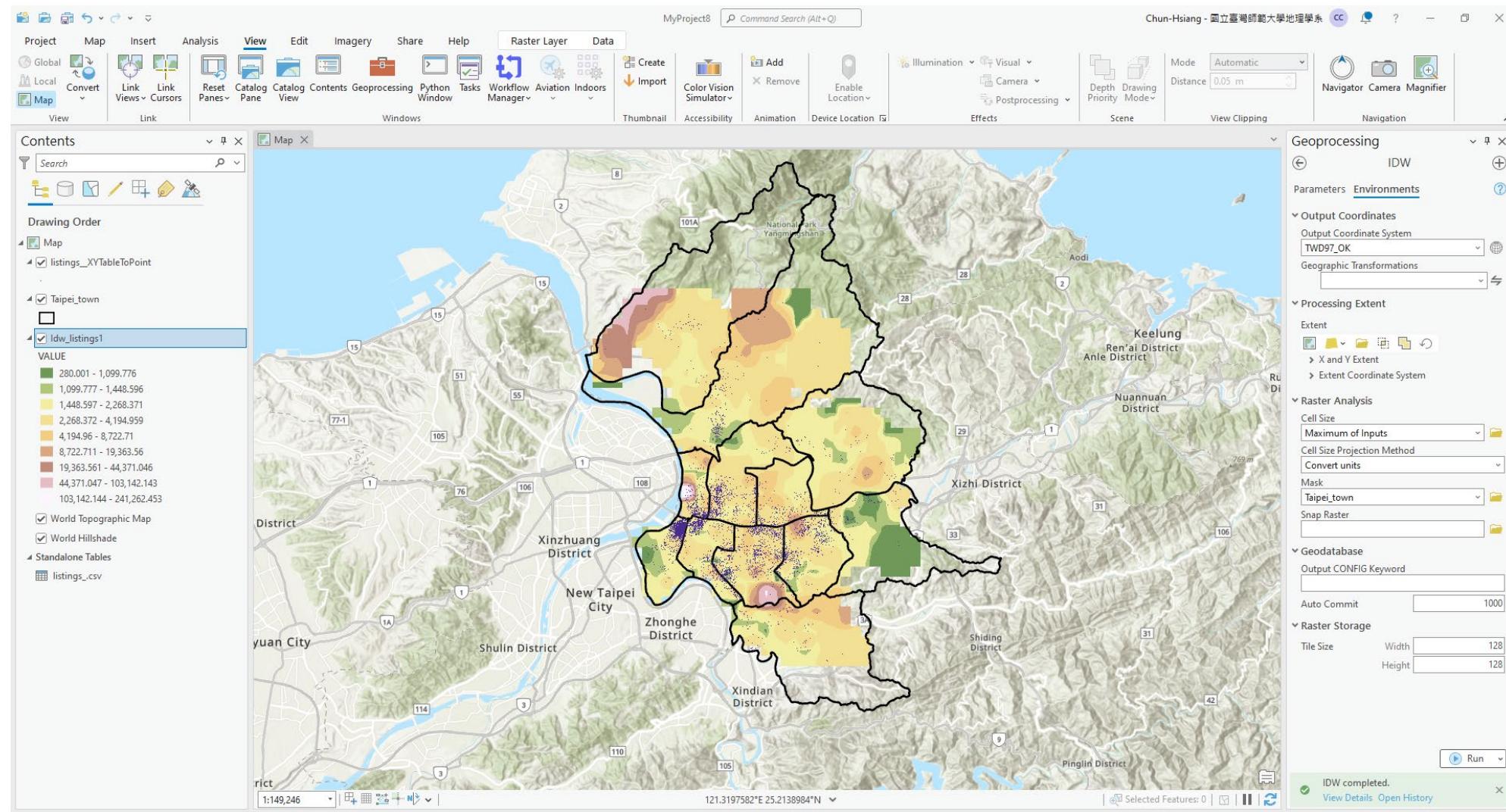


# IDW

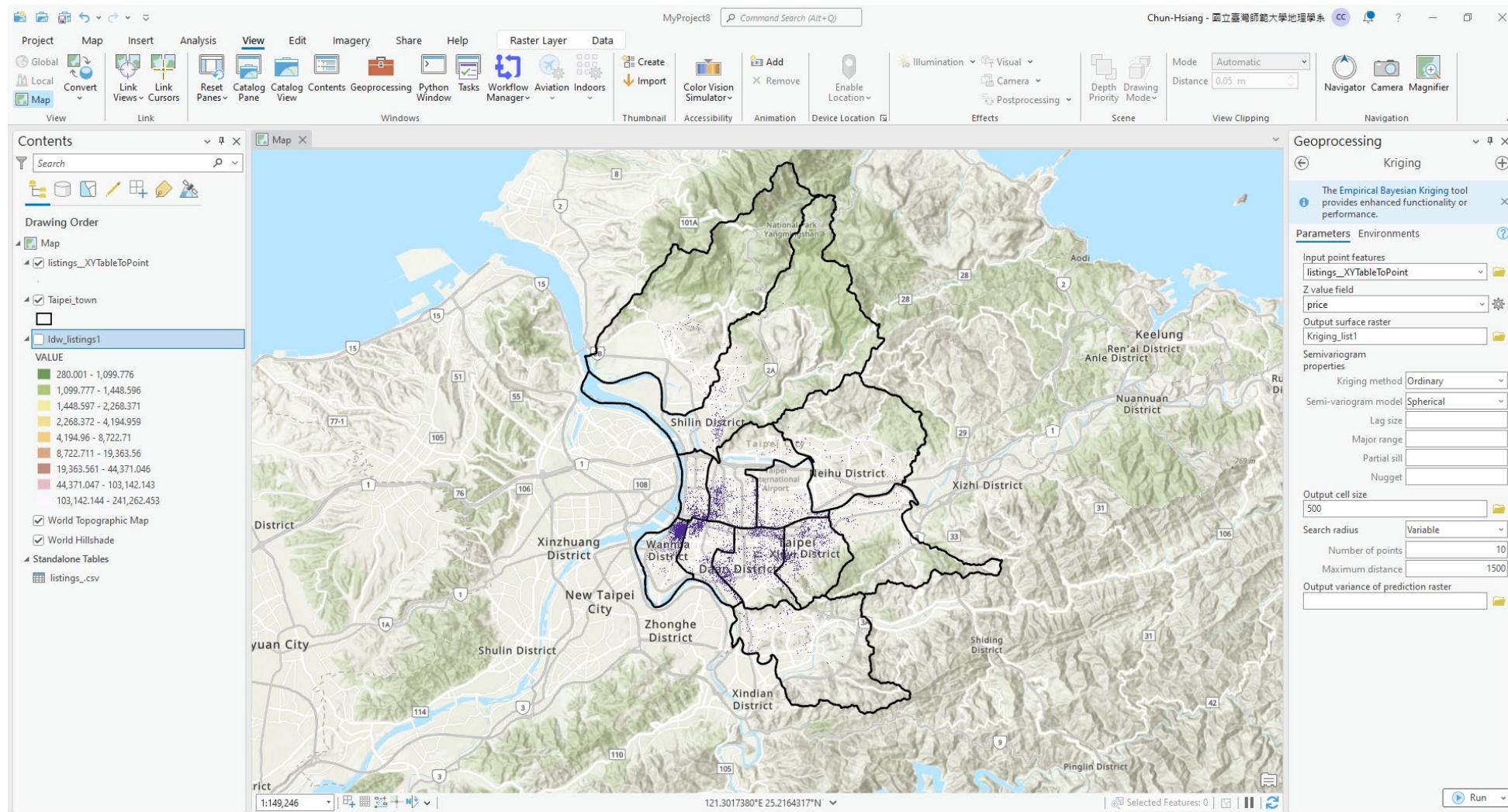


## Screenshot

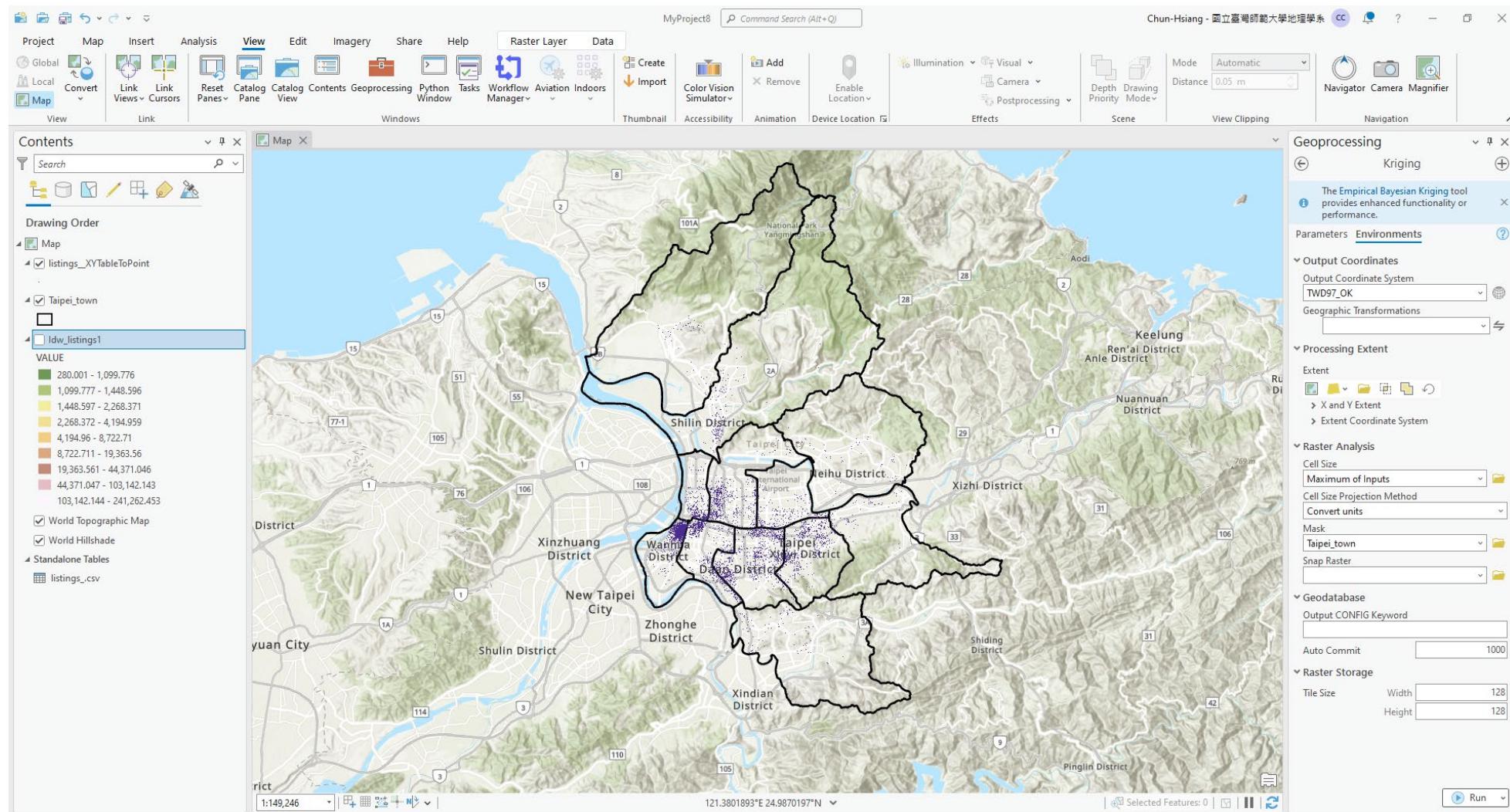
# IDW



# Kriging

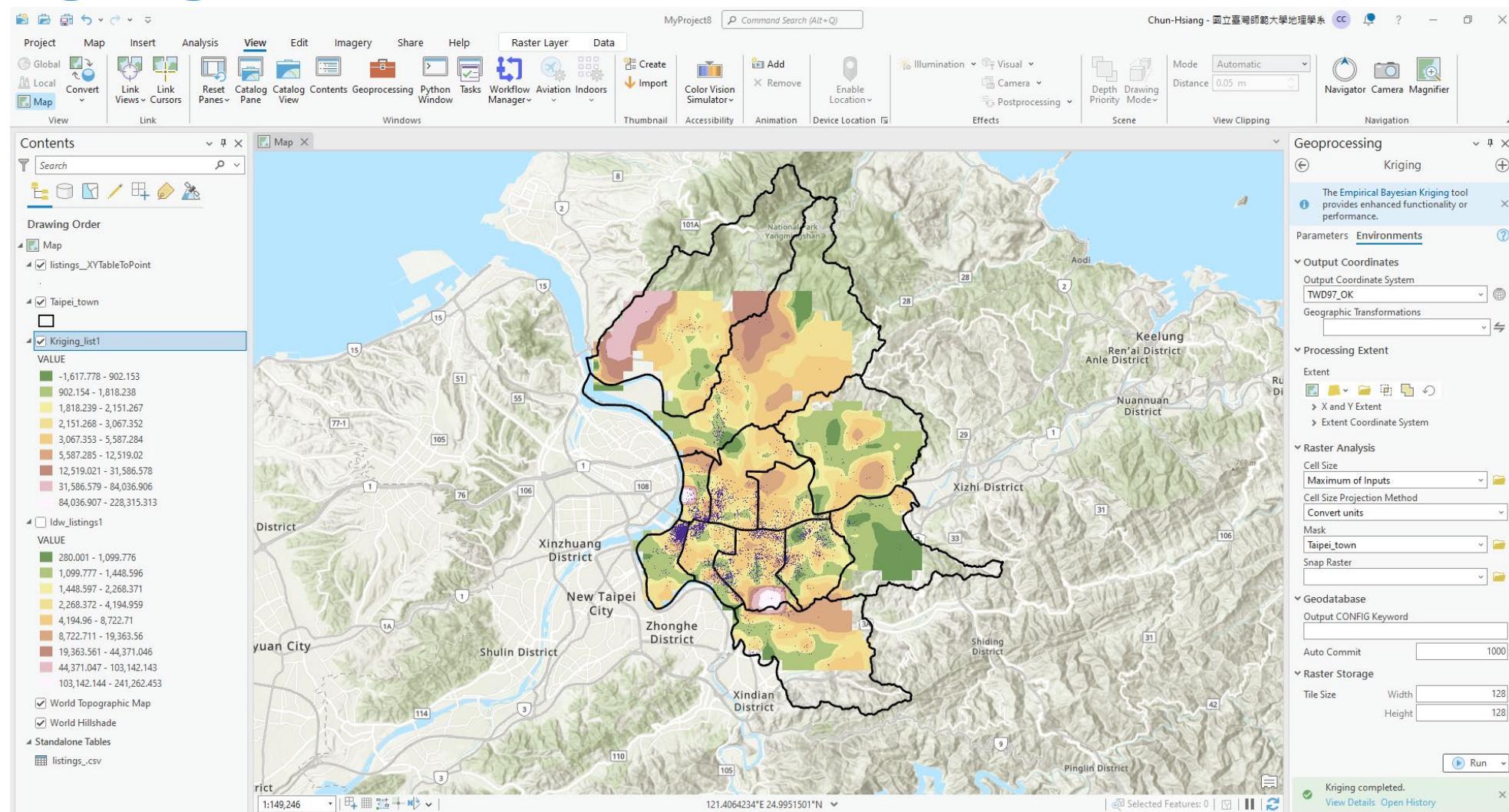


# Kriging

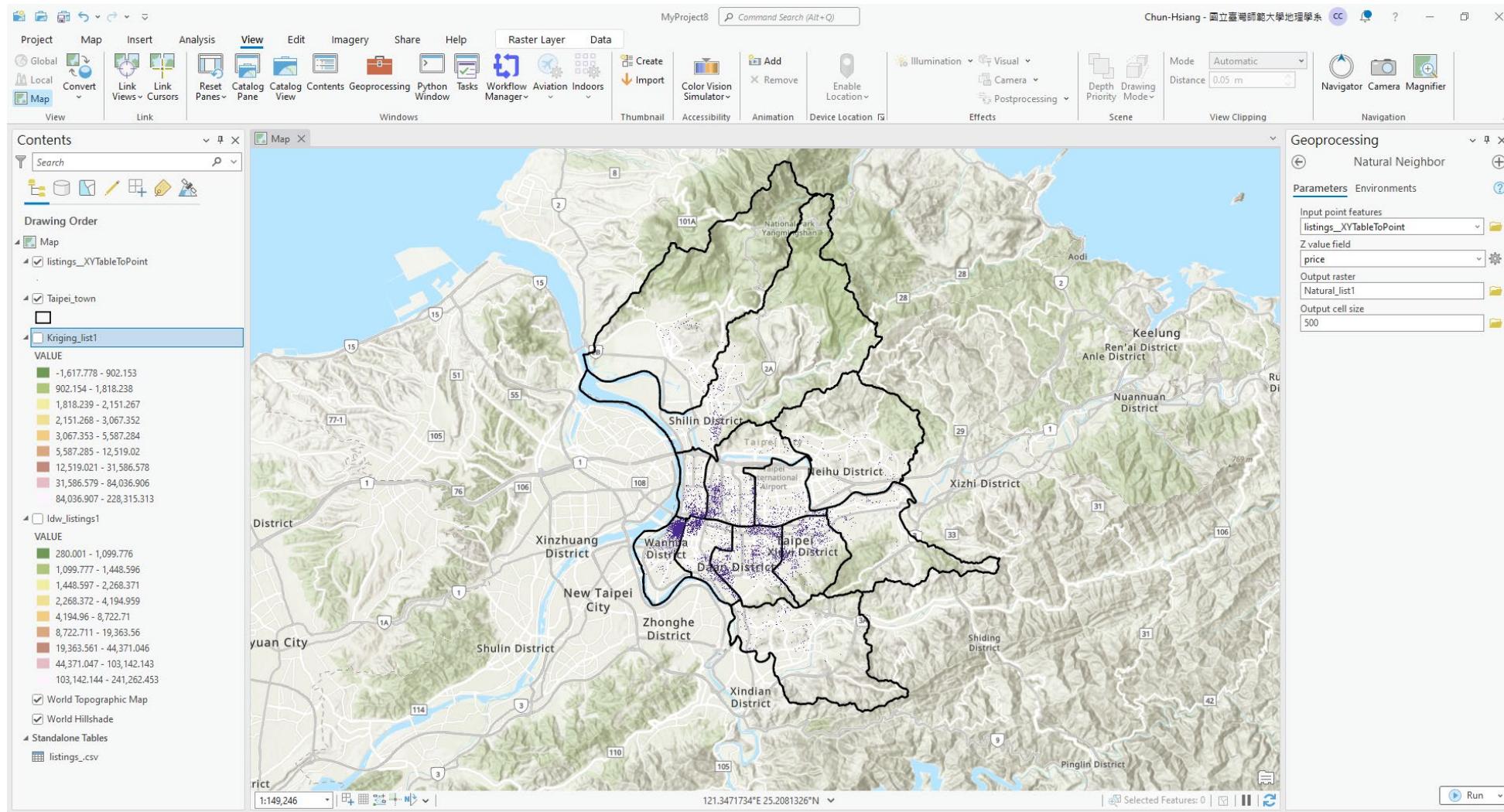


# Screenshot

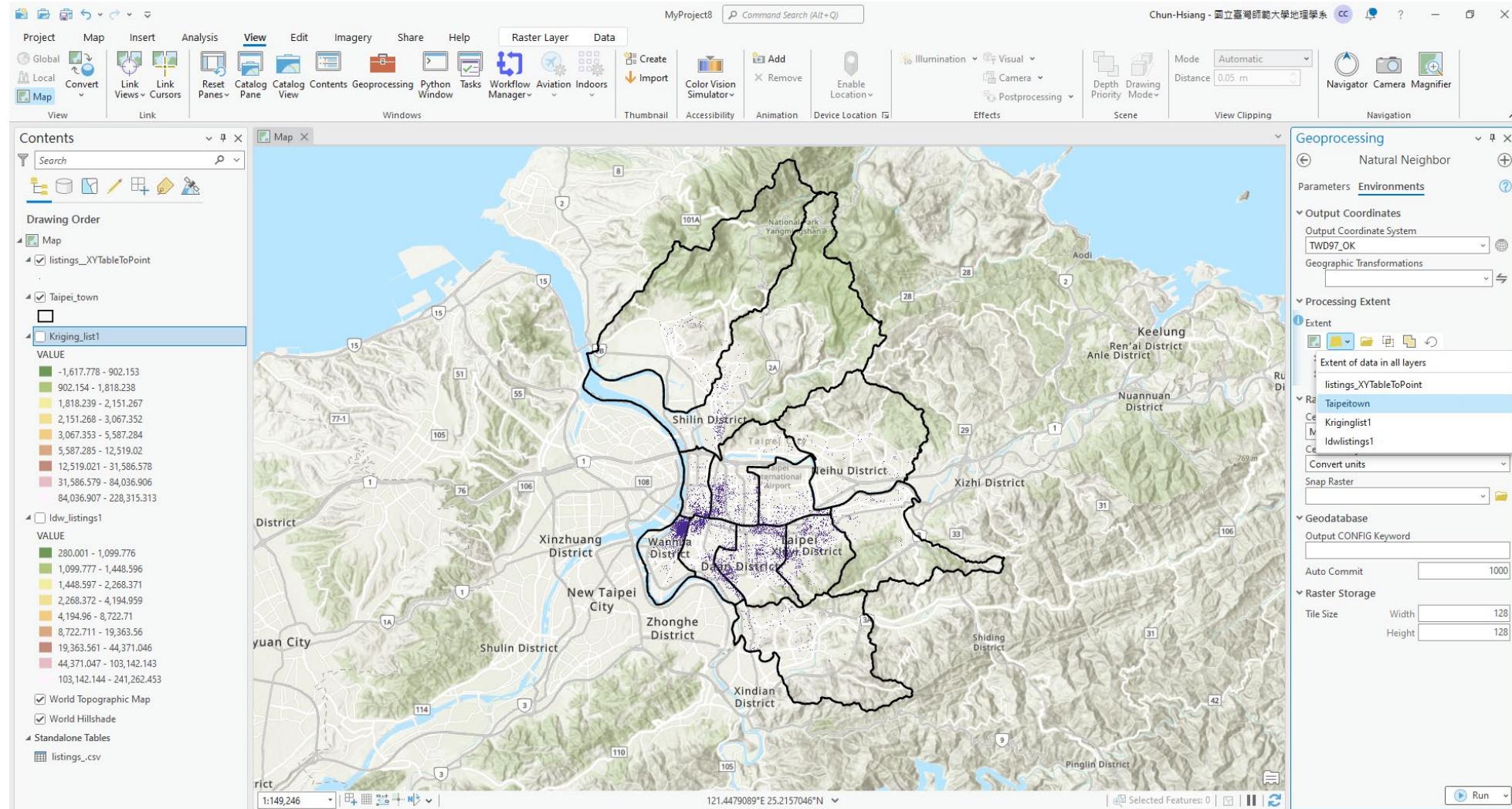
# Kriging



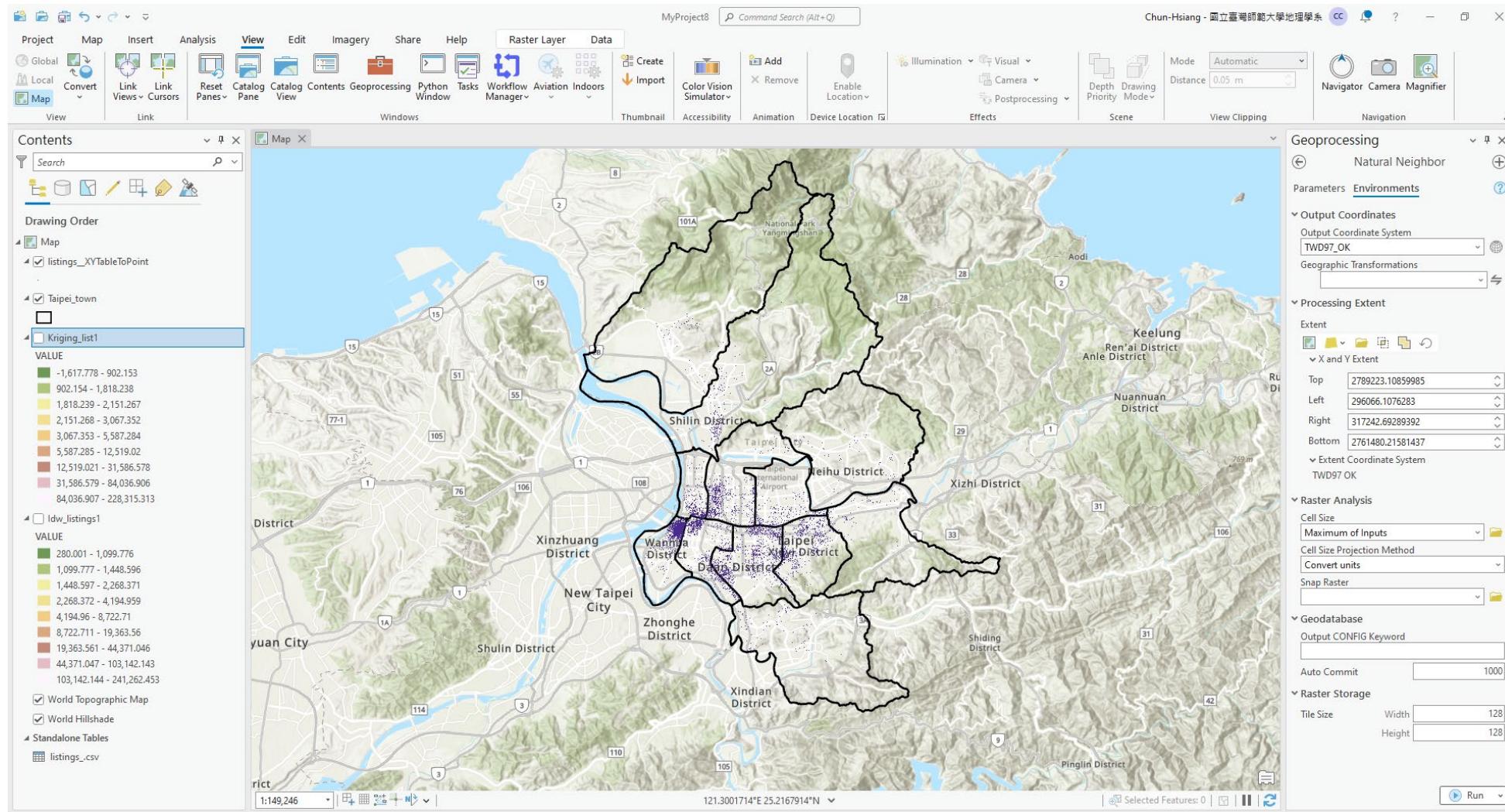
# Natural Neighbor



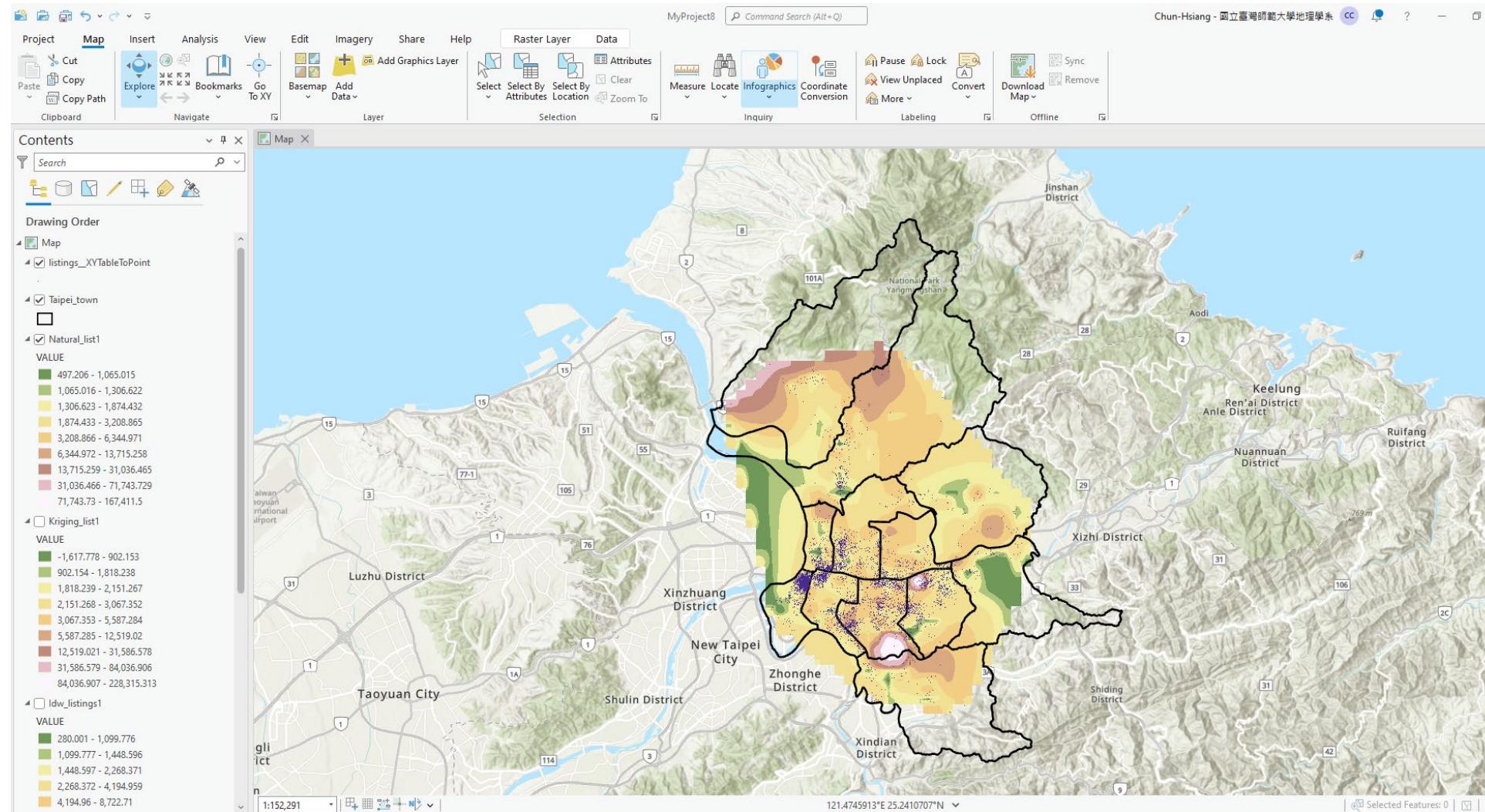
# Natural Neighbor



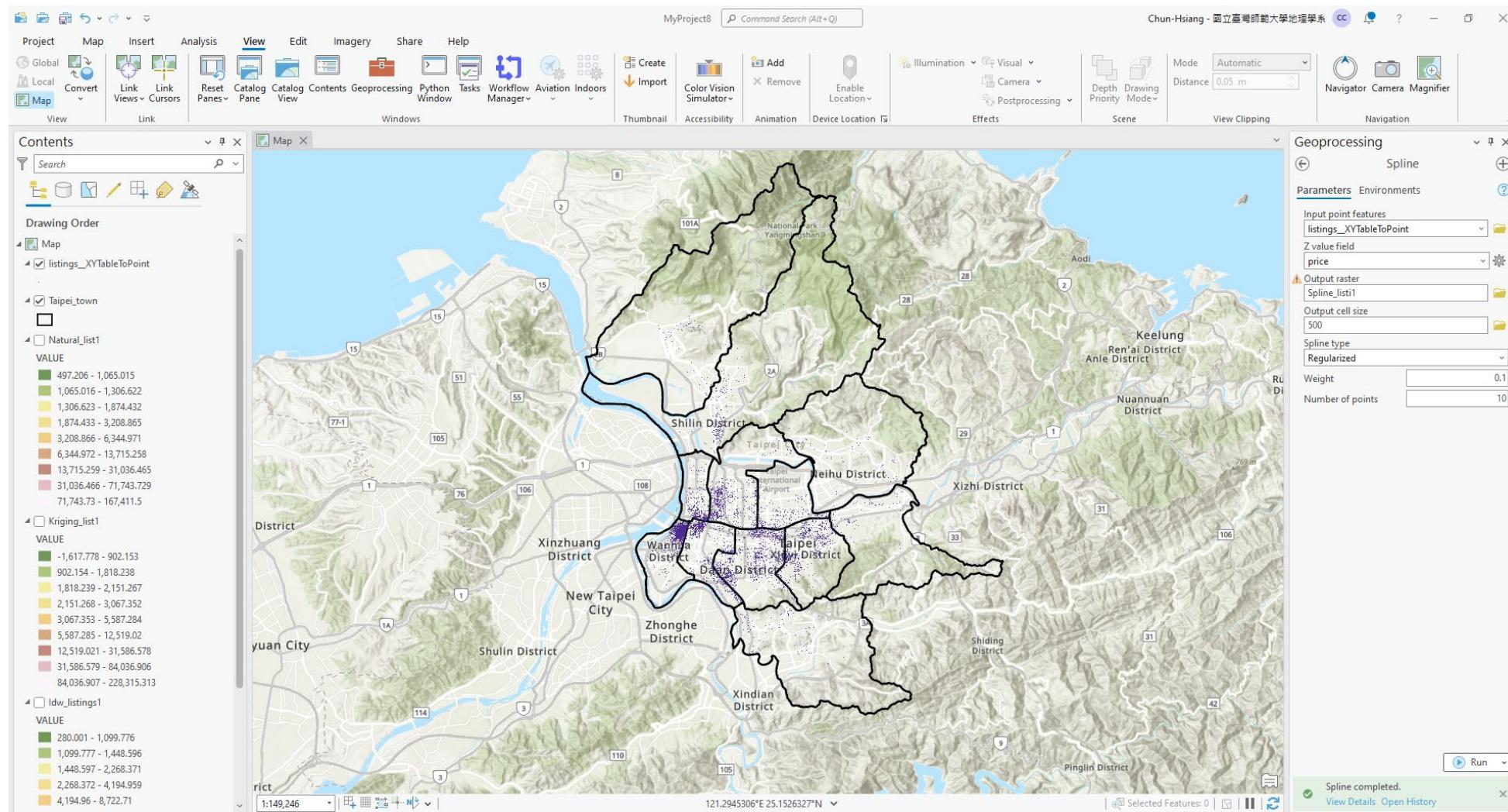
# Natural Neighbor



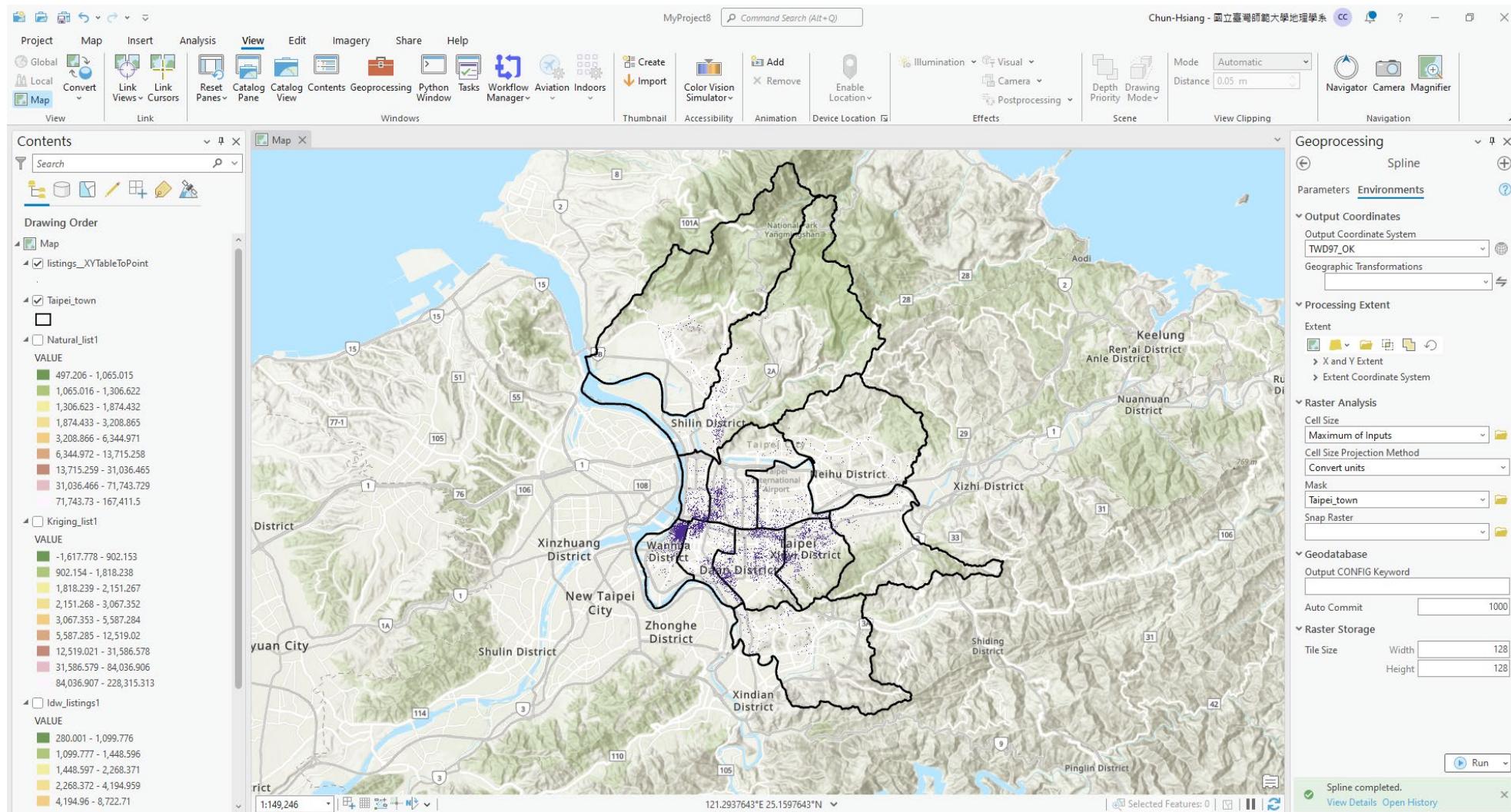
# Natural Neighbor



# Spline

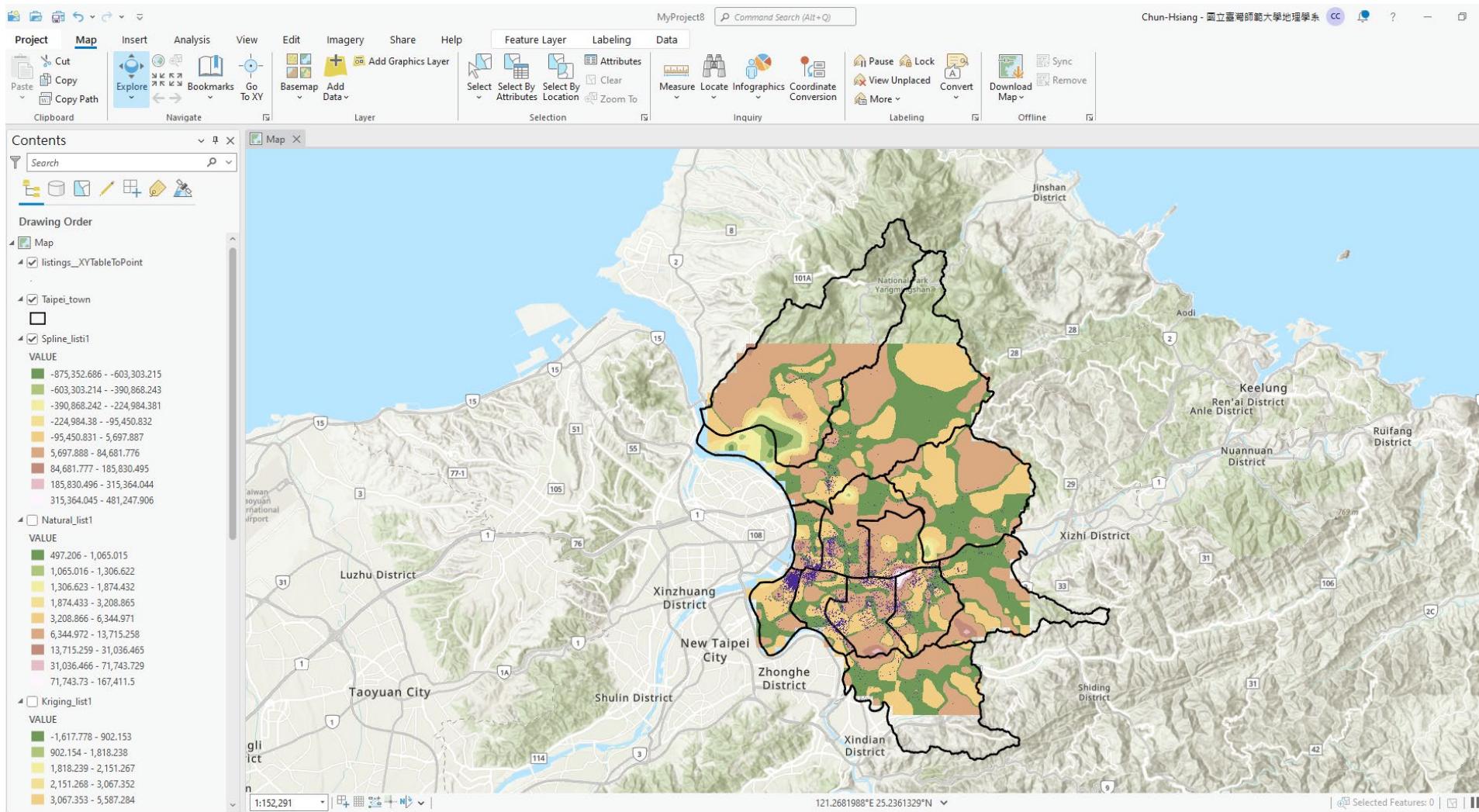


# Spline

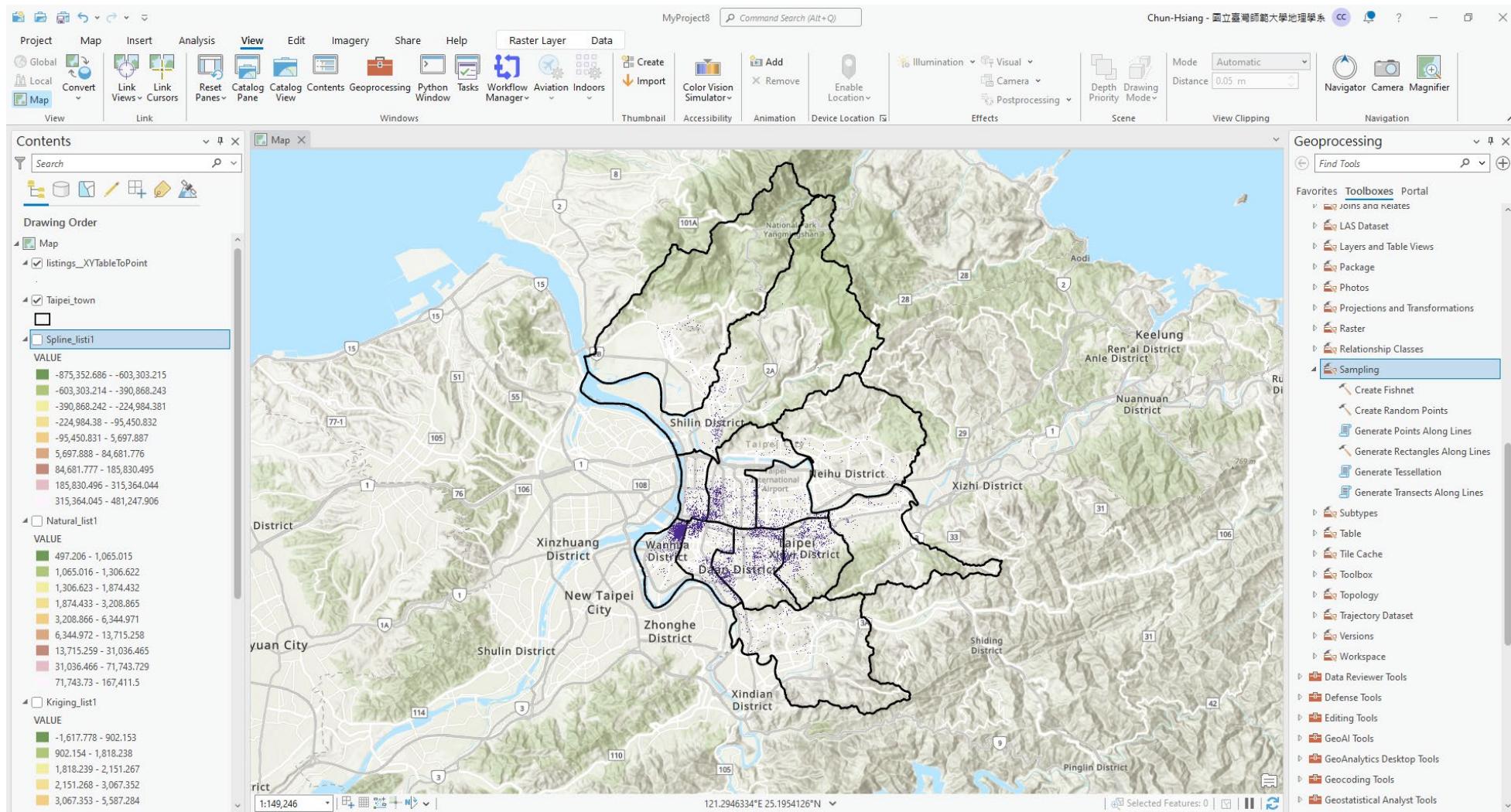


## Screenshot

# Spline



# Create Fishnet for Sampling



# Create 250m x 250m Fishnet

The screenshot shows the ArcGIS Pro interface with a map of Taipei, Taiwan, and its surrounding districts. The map includes roads, rivers, and district boundaries. A yellow circle labeled '1' highlights the 'Map' tab in the ribbon, which is currently selected. The 'Geoprocessing' pane on the right is open to the 'Create Fishnet' tool. A yellow circle labeled '2' highlights the 'Geometry Type' dropdown menu in the 'Parameters' section, which is set to 'Polygon'. Other parameters visible include 'Output Feature Class' (Grid\_250m.shp), 'Fishnet Origin Coordinate' (206066.107628305, 2761480.21581437), 'Cell Size Width' (250), 'Cell Size Height' (250), and 'Opposite corner of Fishnet' (317242.692893918, 2789223.10859985). The 'Create Label Points' checkbox is checked.

MyProject8 | Command Search (Alt+Q)

Project Map Insert Analysis View Edit Imagery Share Help

Global Local Convert Link Views Cursors Reset Catalog Panes Catalog View Geoprocessing Python Window Tasks Workflow Manager Aviation Indoors Create Import Color Vision Simulator Add Remove Enable Location Depth Priority Thumbnail Accessibility Animation Device Location Effects

Contents

Map

listings\_XYTableToPoint

Taipei\_town

Spline\_list1

Value

Natural\_list1

Value

Kriging\_list1

Value

Map

listings\_XYTableToPoint

Taipei\_town

Spline\_list1

Value

Natural\_list1

Value

Kriging\_list1

Value

1:149,246

121.2976615°E 25.1515569°N

Geoprocessing

Create Fishnet

Parameters Environments

Output Feature Class: Grid\_250m.shp

Fishnet Origin Coordinate: 206066.107628305, 2761480.21581437

Directly select Taipei City Layer

X and Y Extent

Top: 2789223.10859985

Left: 296066.1076283

Right: 317242.69289392

Bottom: 2761480.21581437

Extent Coordinate System: TWD97 OK

Y-Axis Coordinate

X: 296066.107628305 Y: 2761490.21581437

Cell Size Width: 250

Cell Size Height: 250

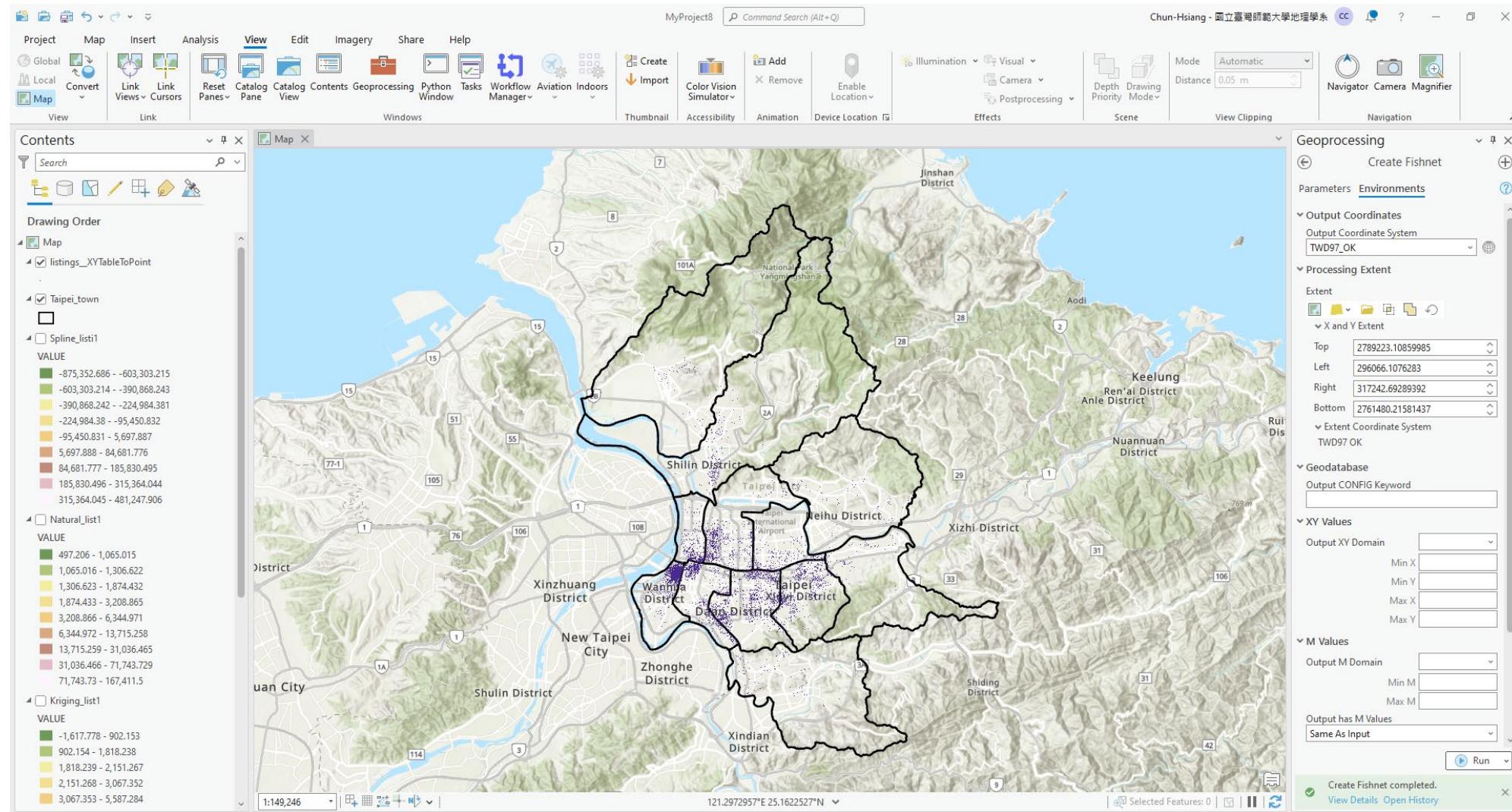
Opposite corner of Fishnet

X: 317242.692893918 Y: 2789223.10859985

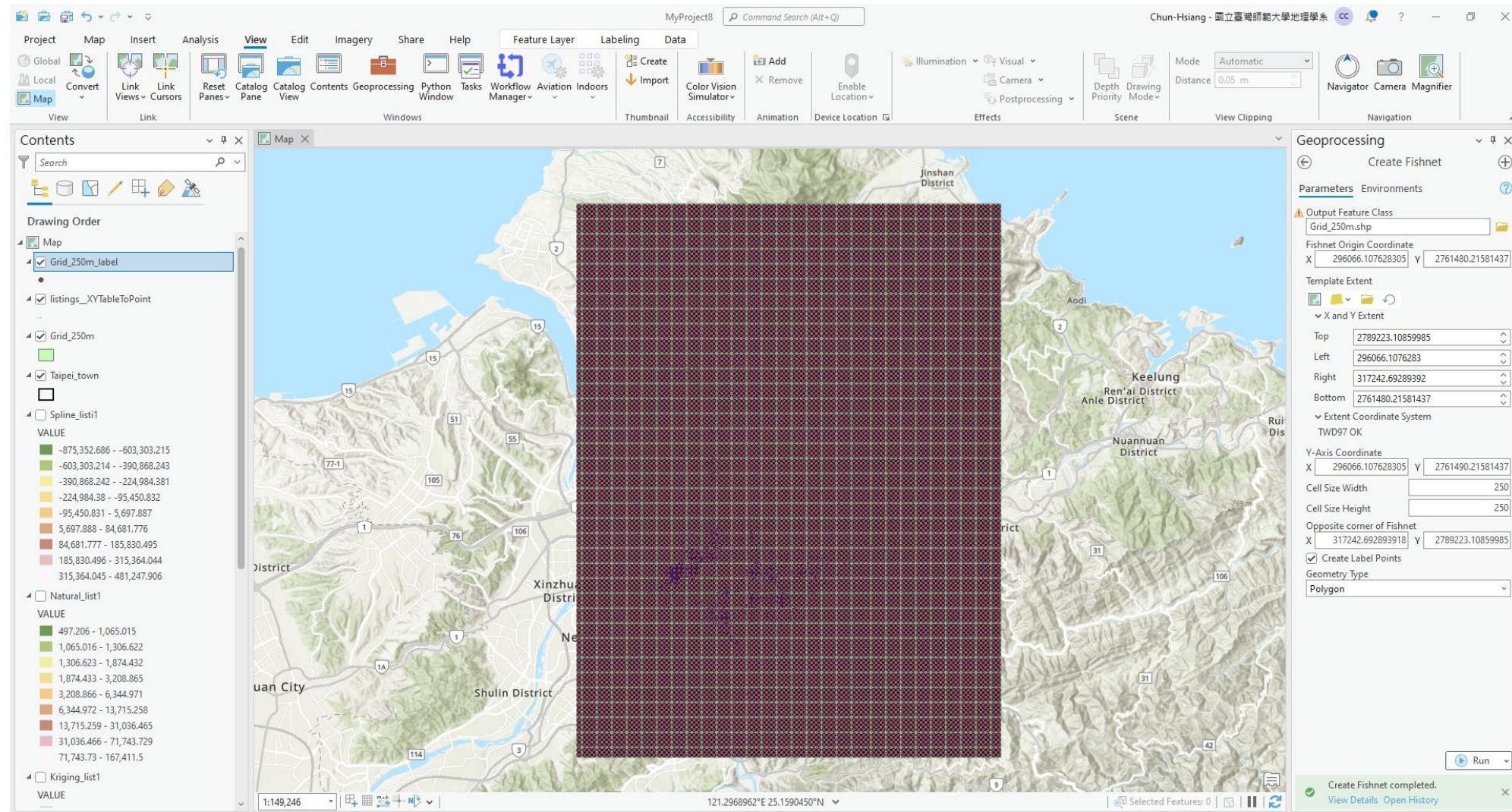
Create Label Points:

Geometry Type:

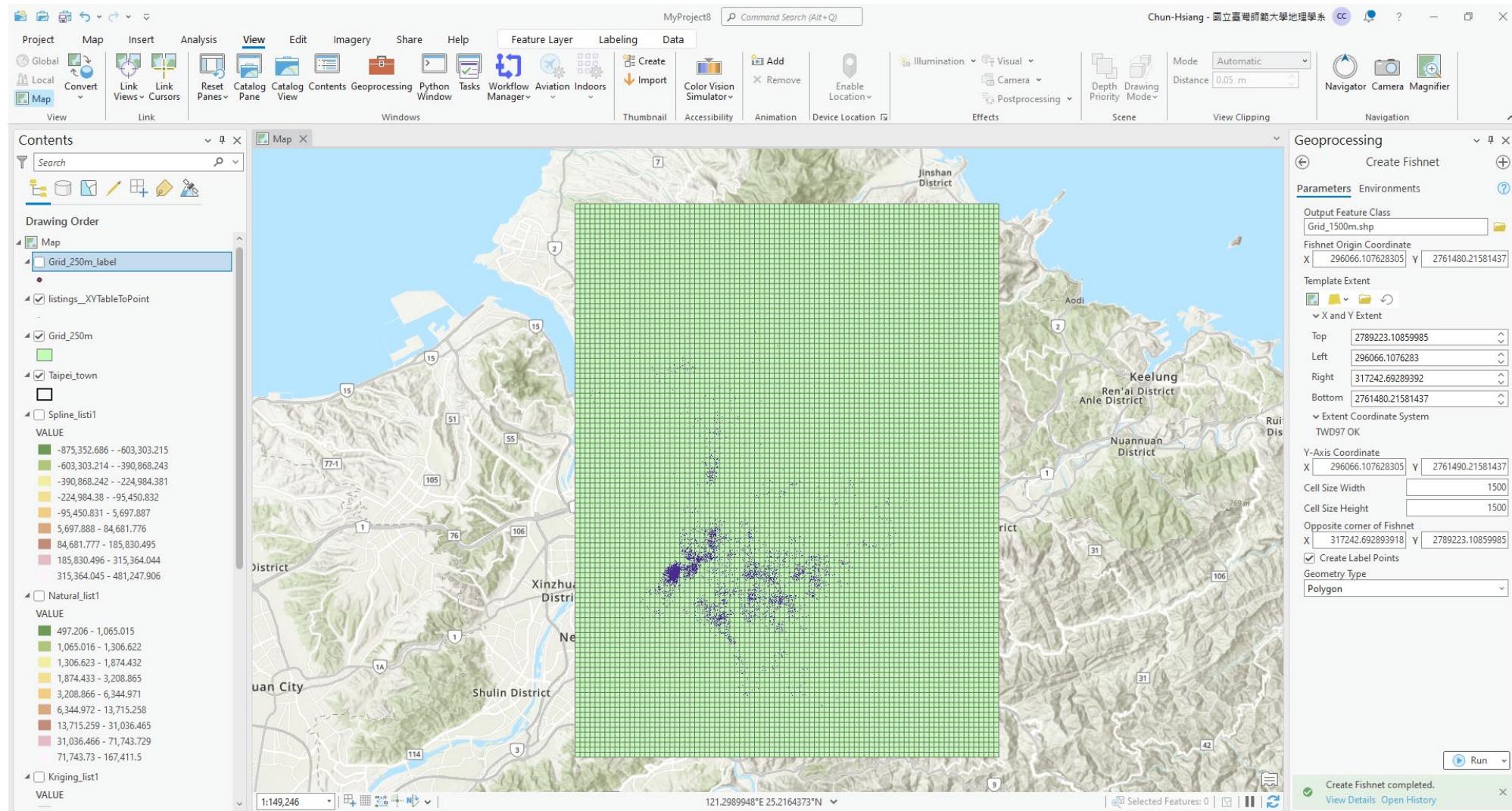
# Create 250m x 250m Fishnet



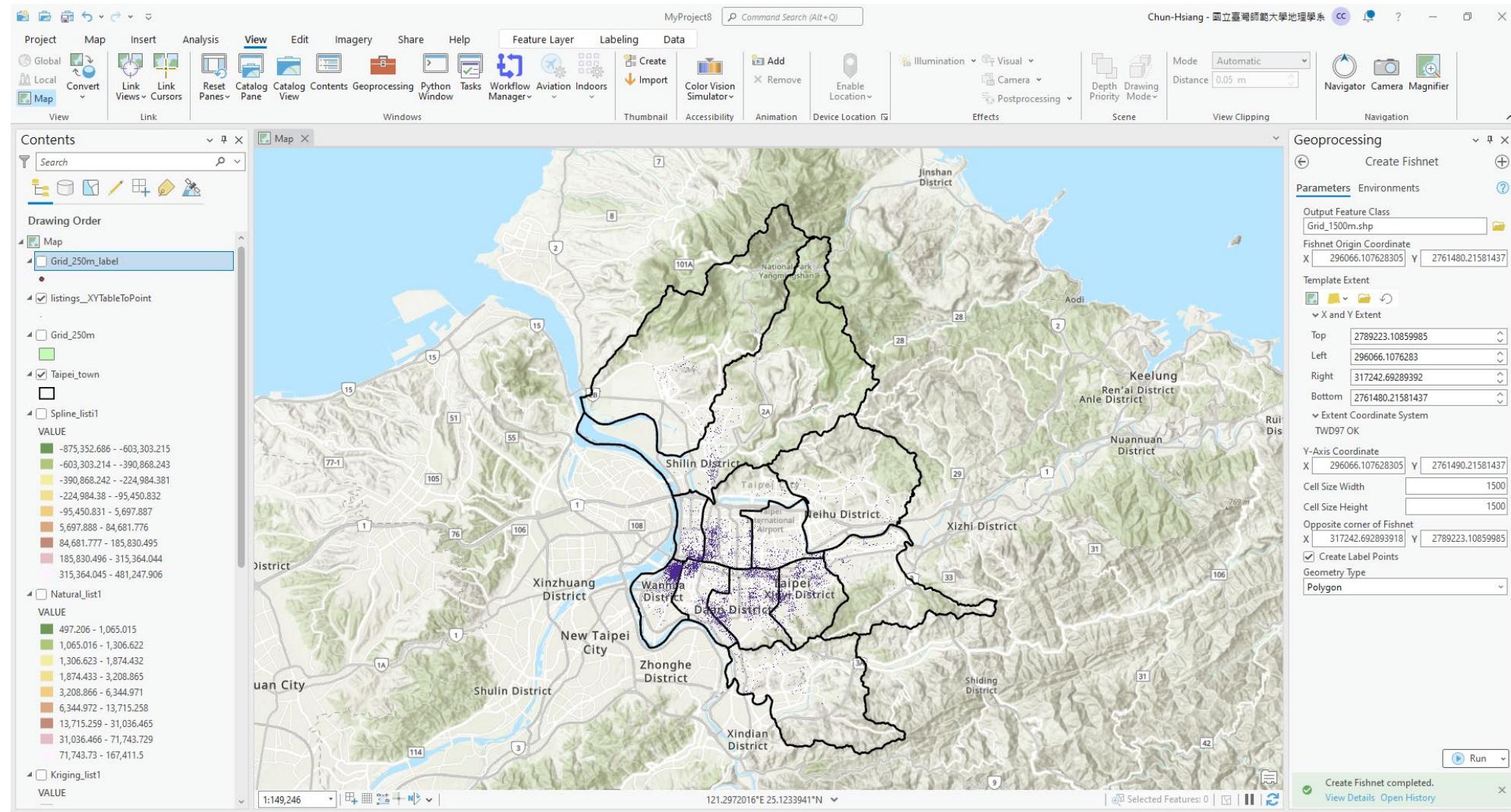
# Create 250m x 250m Fishnet



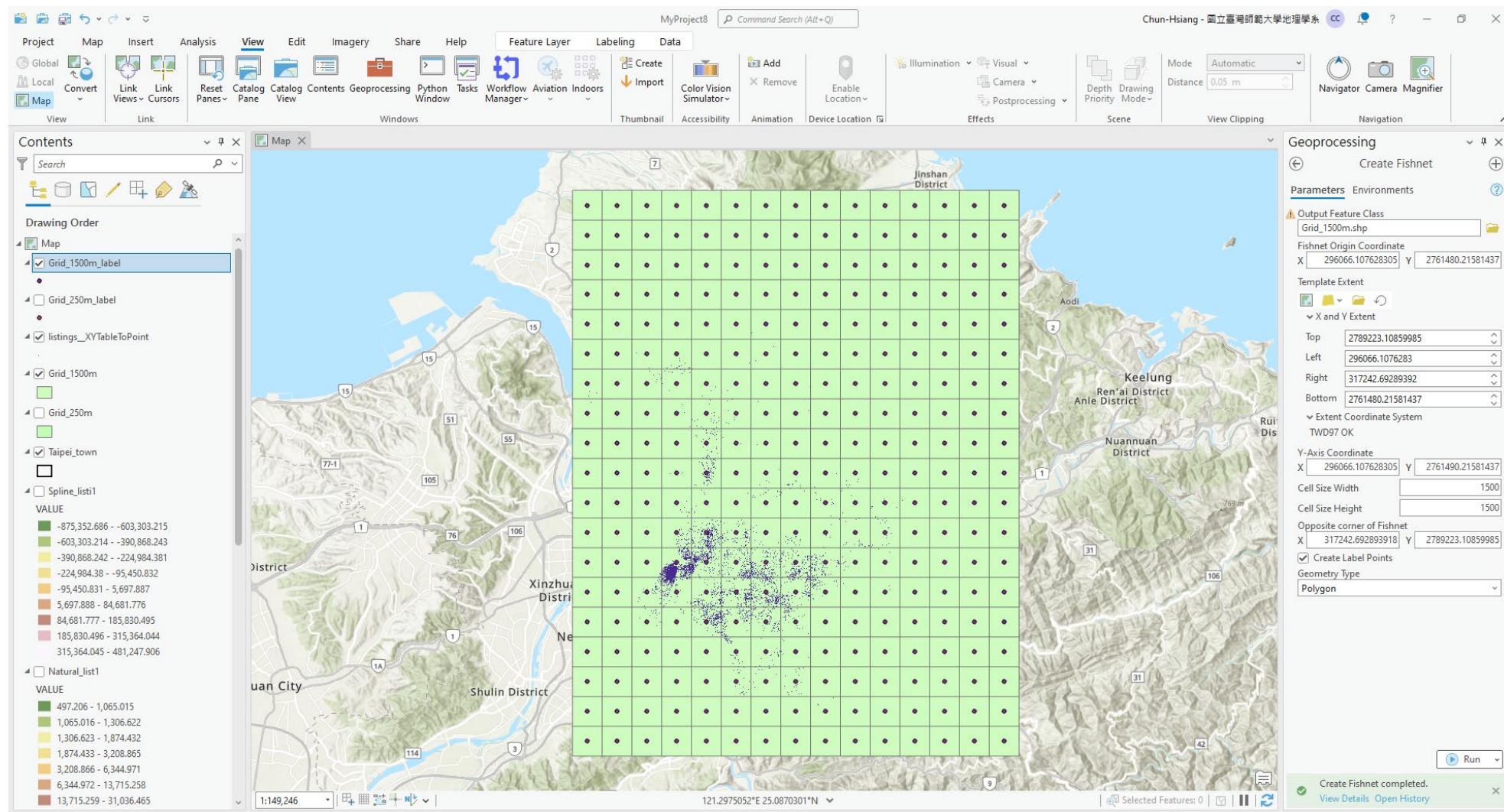
# Create 1500m x 1500m Fishnet



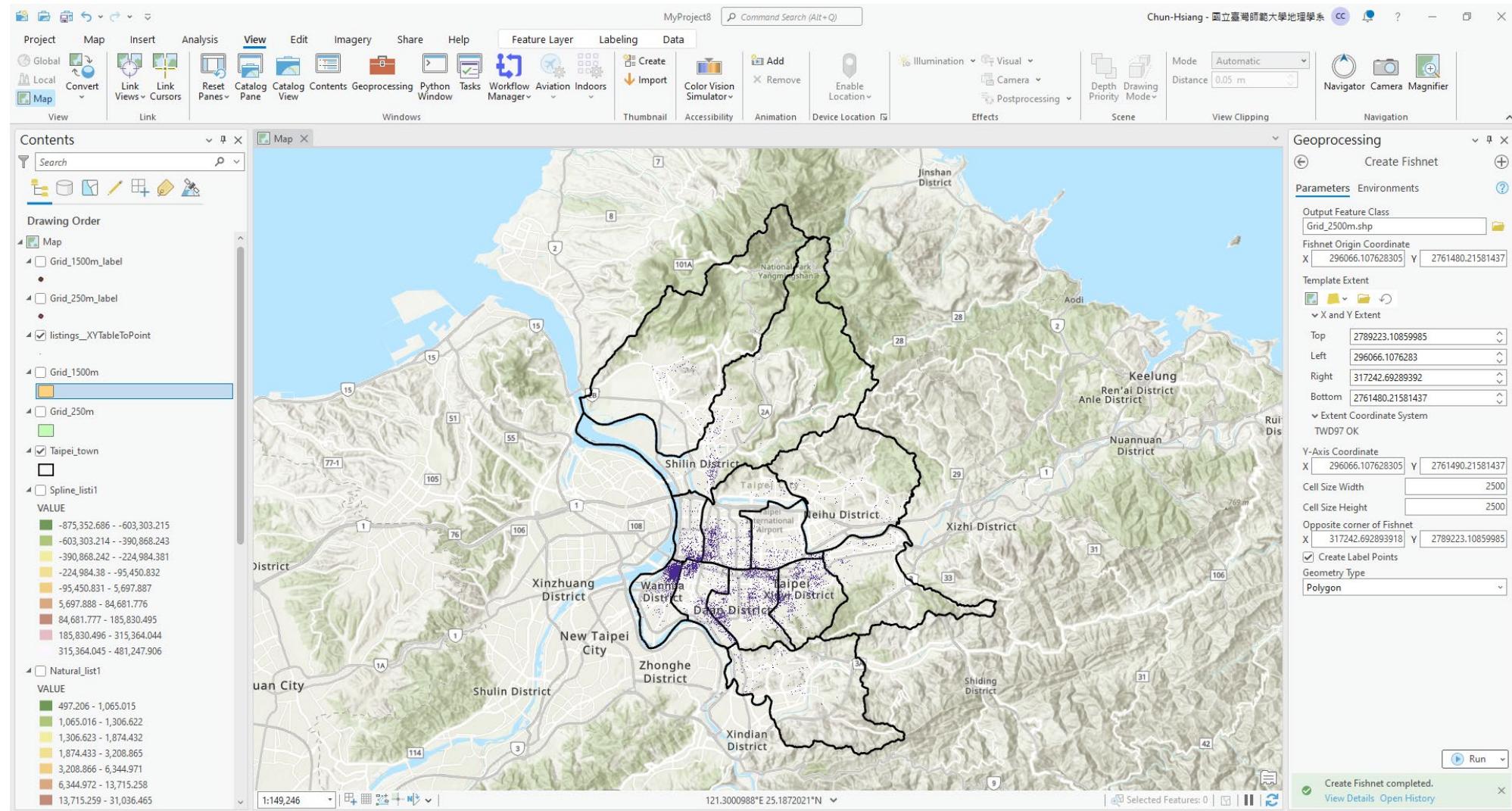
# Create 1500m x 1500m Fishnet



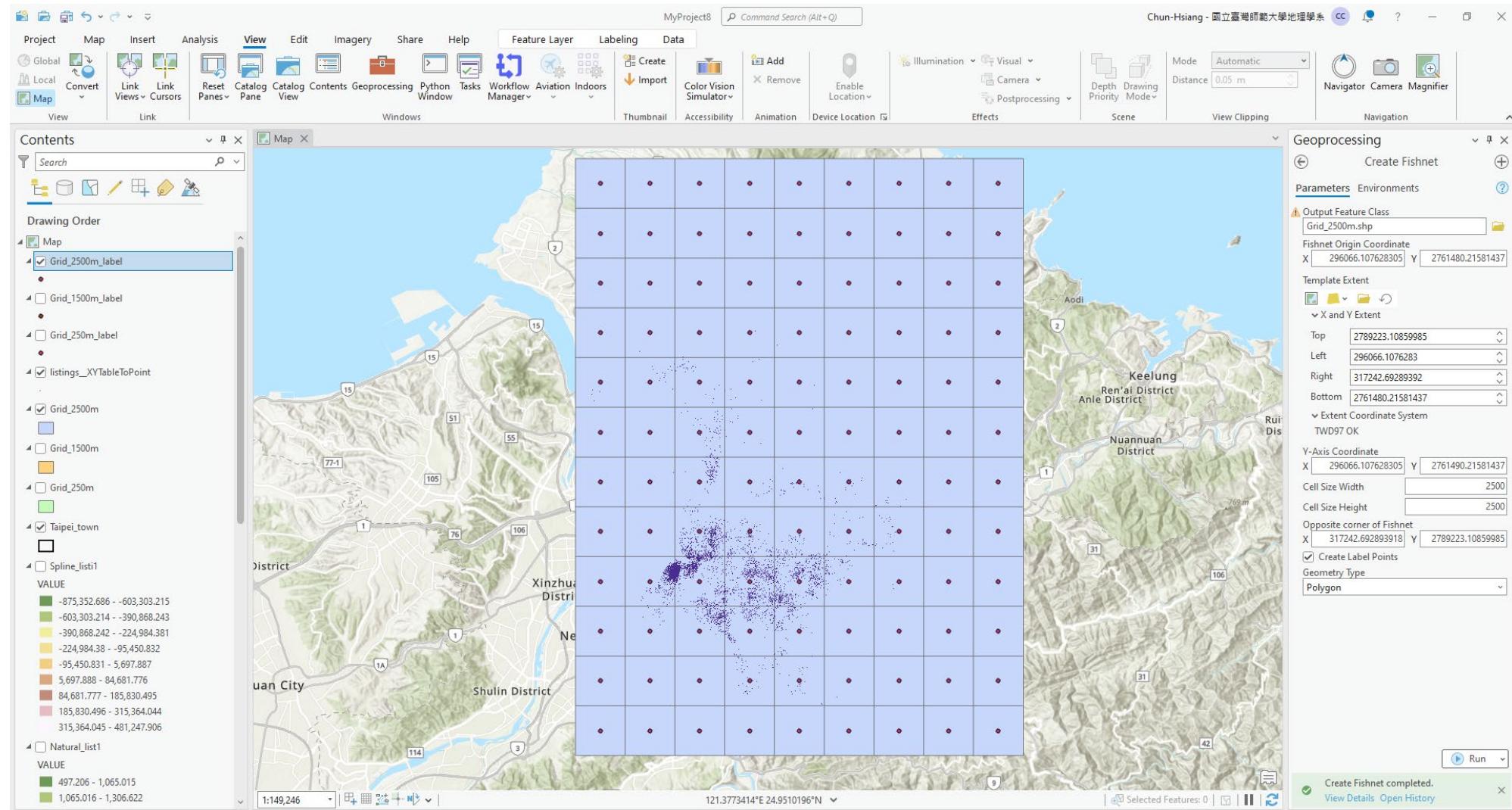
# Create 1500m x 1500m Fishnet



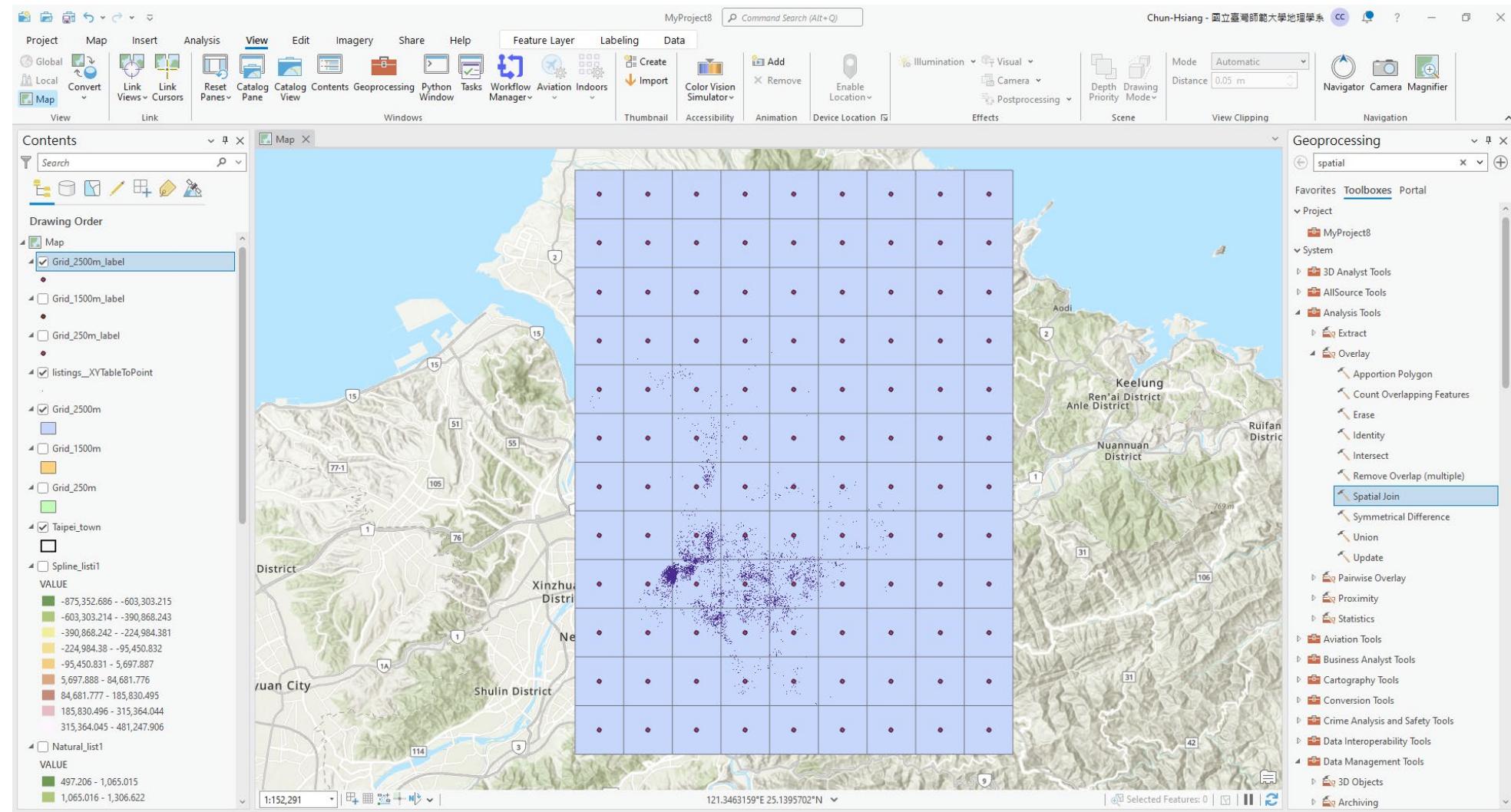
# Create 2500m x 2500m Fishnet



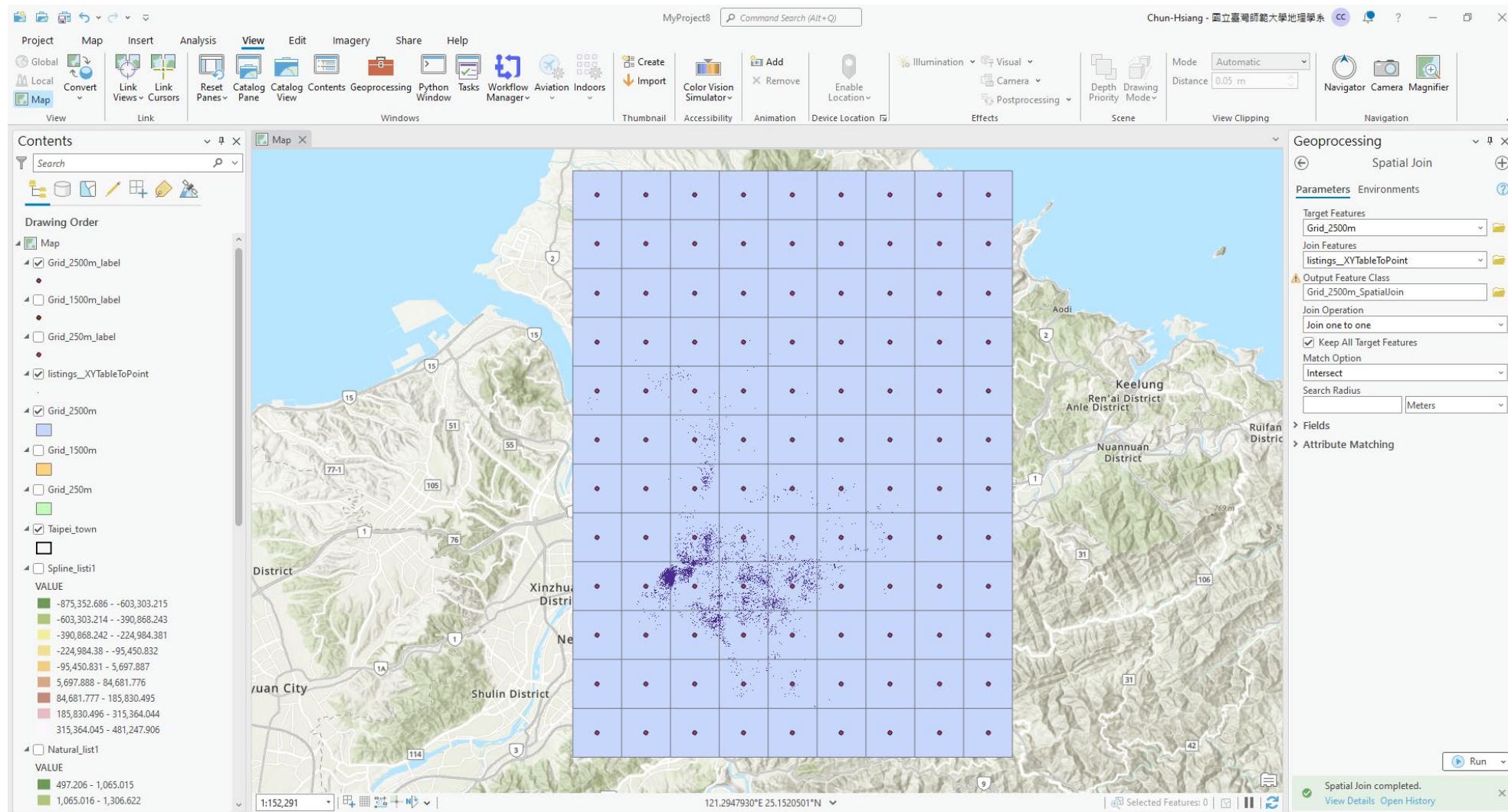
# Create 2500m x 2500m Fishnet



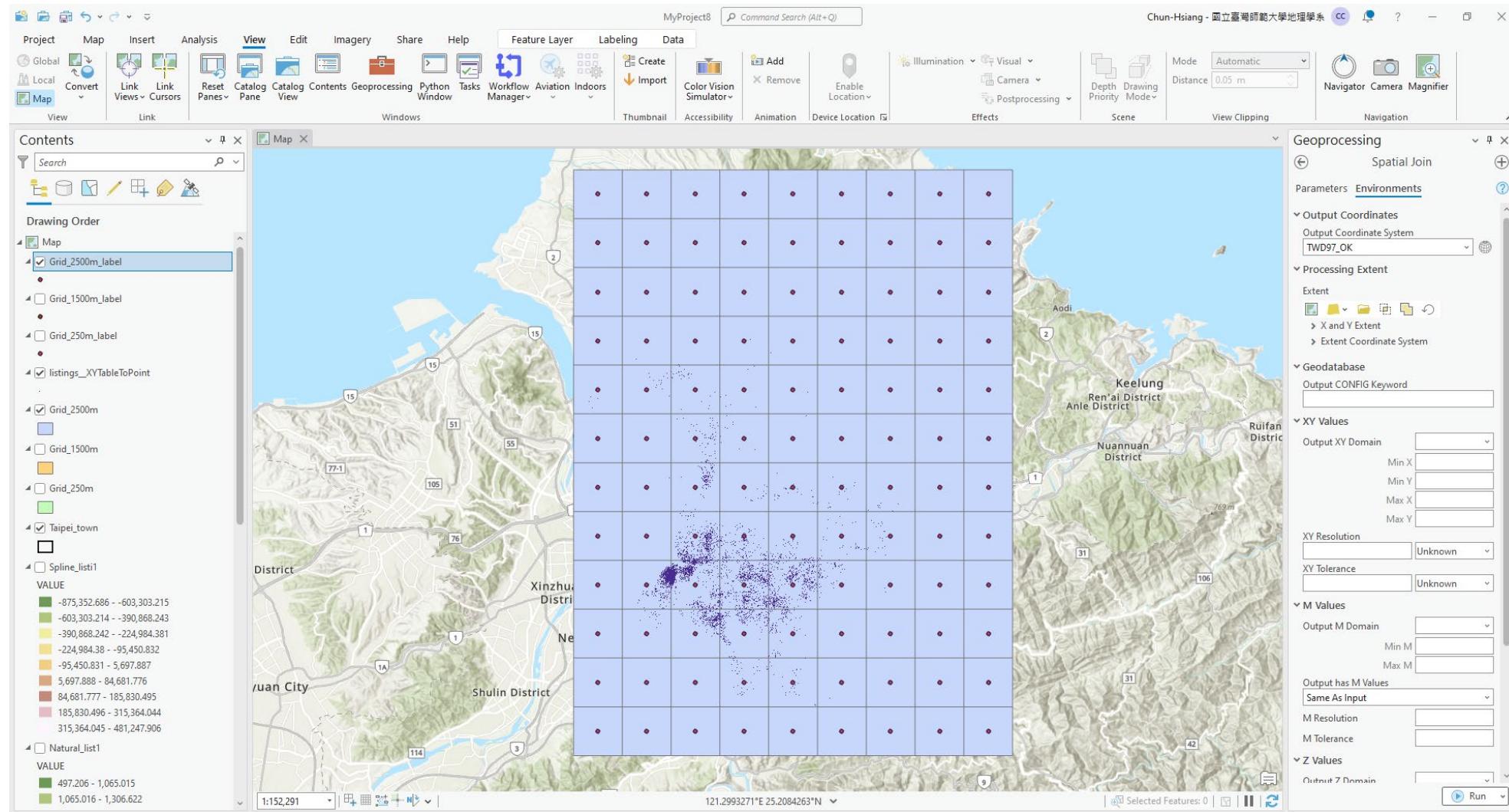
# Spatial Join for Counting Number of Airbnb Listings



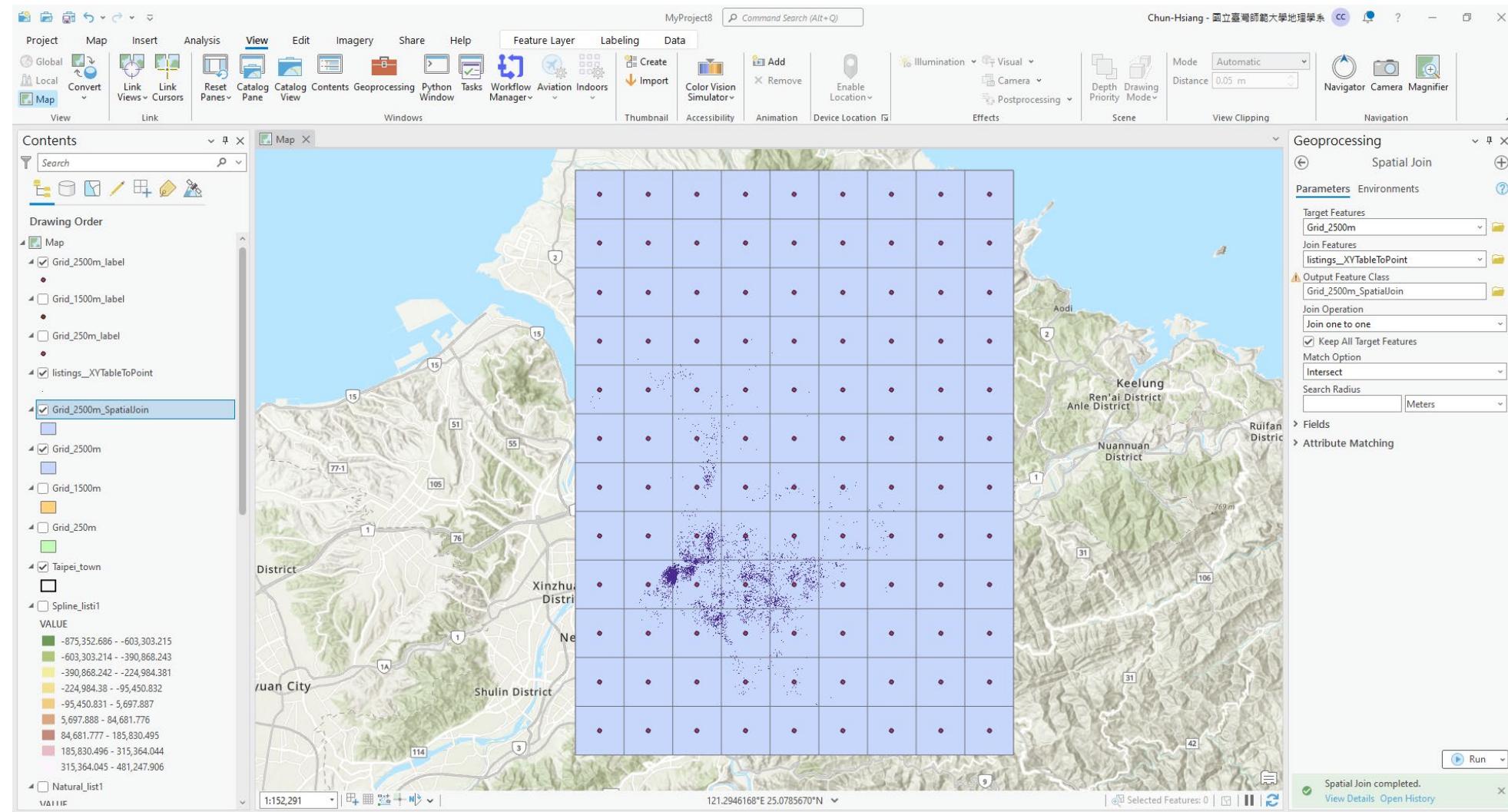
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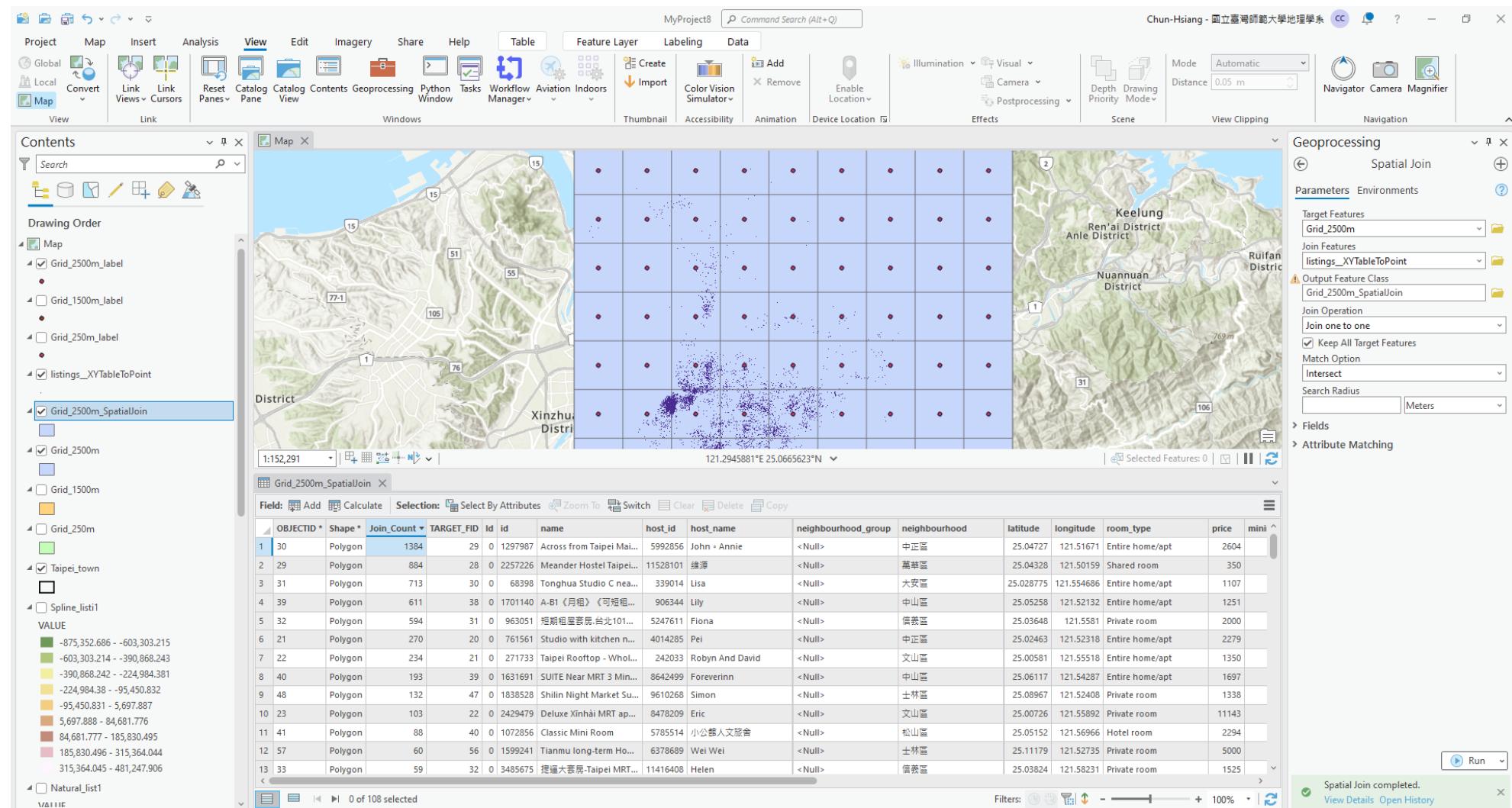
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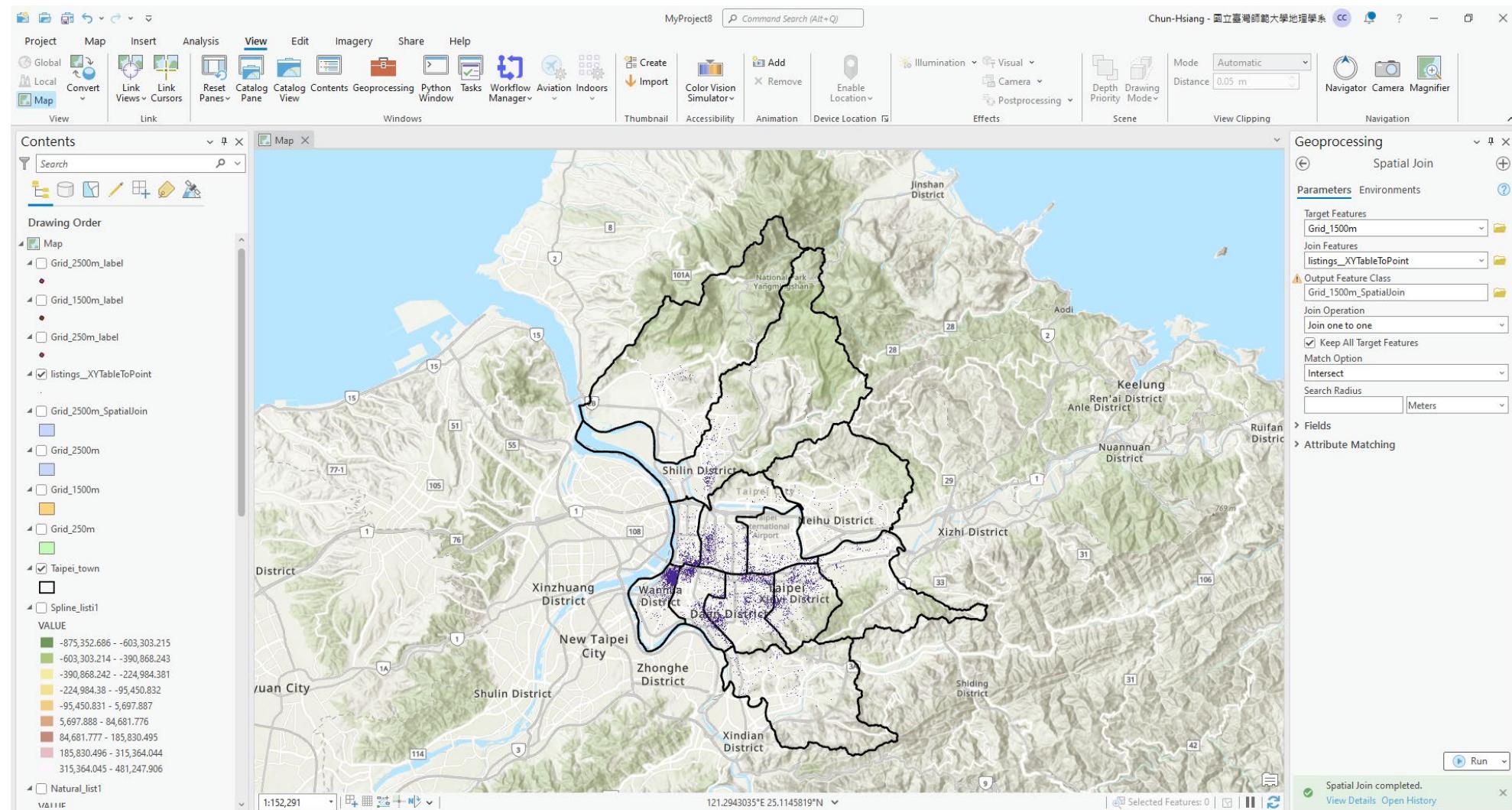
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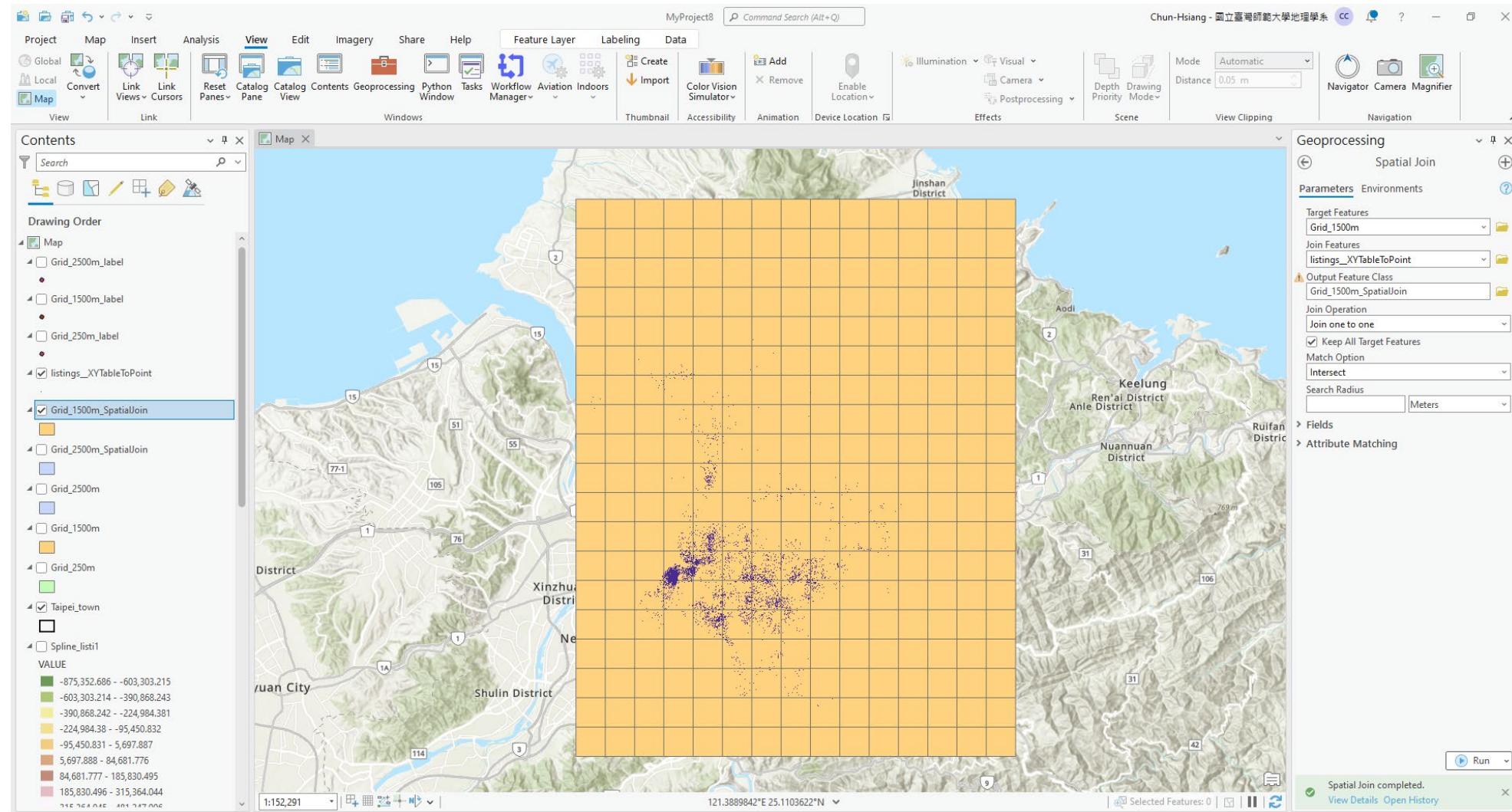
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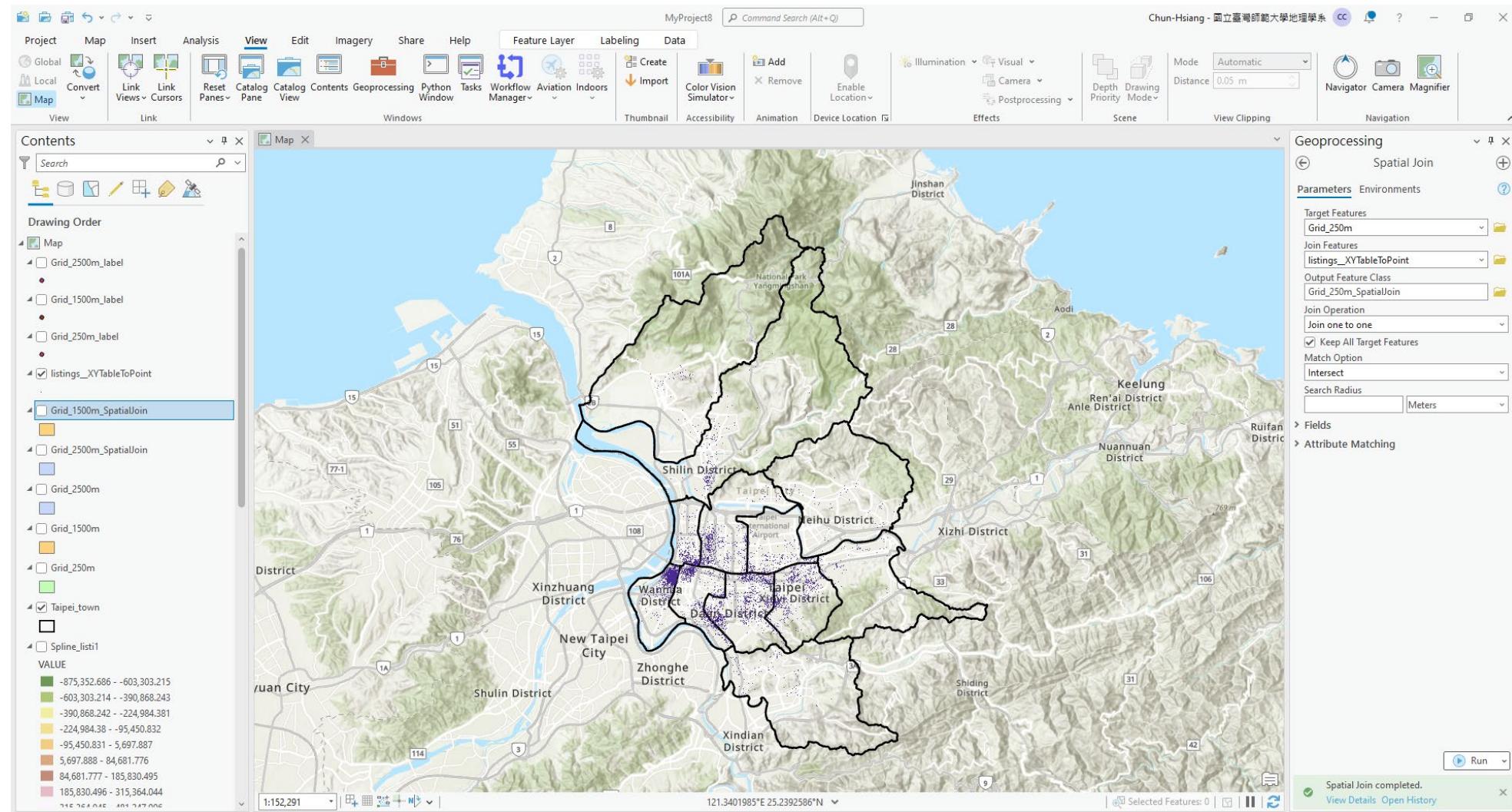
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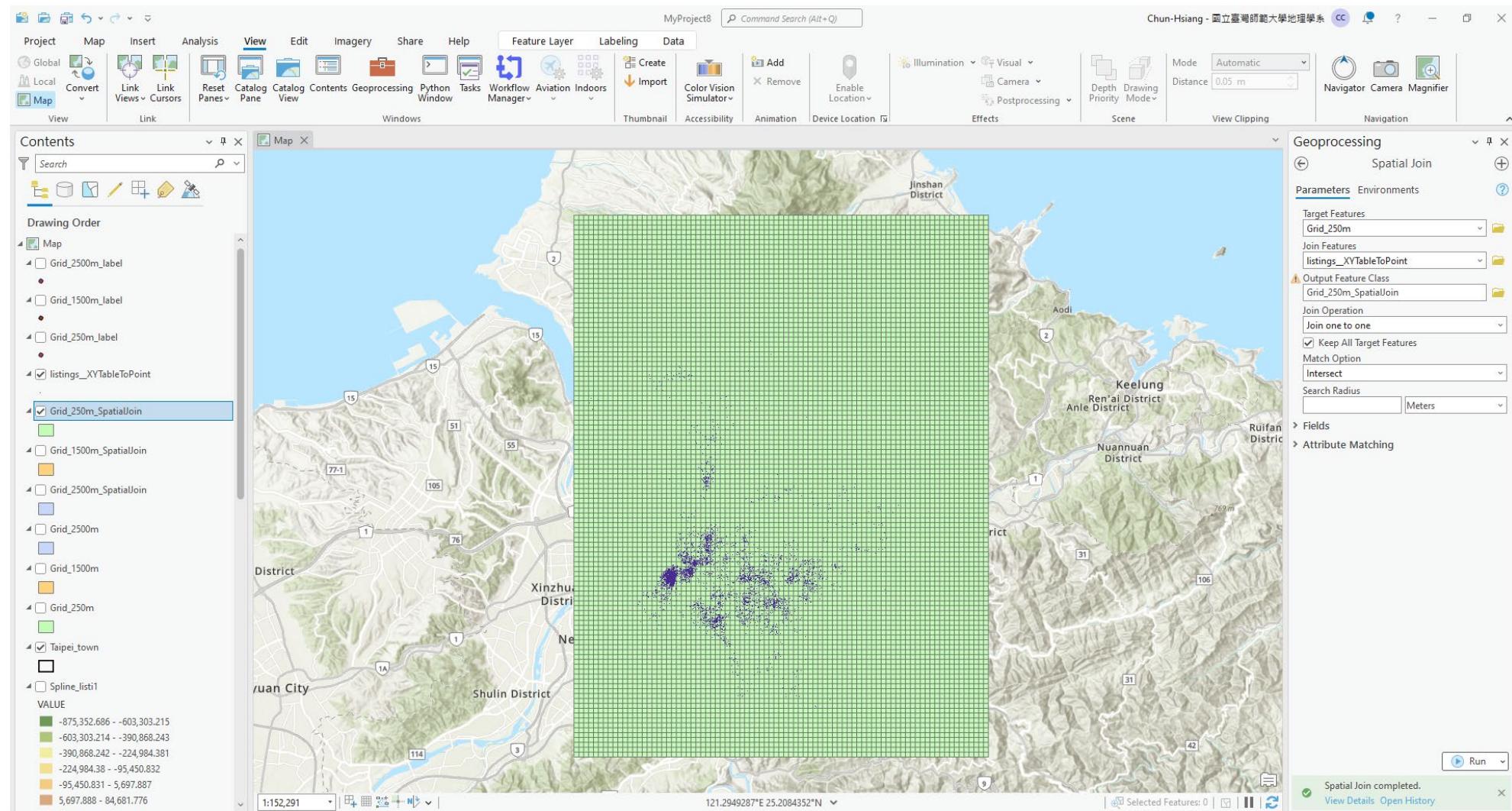
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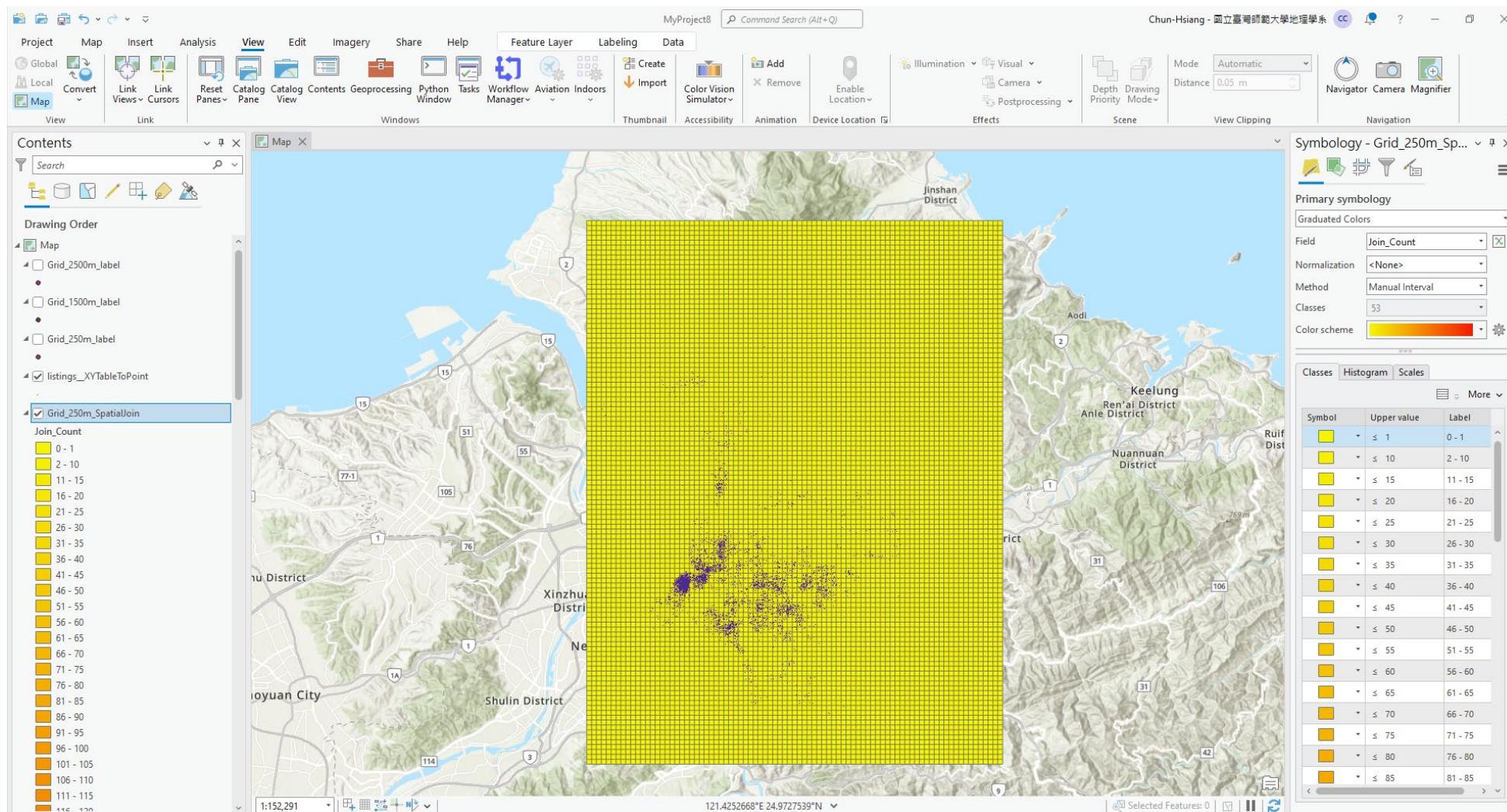
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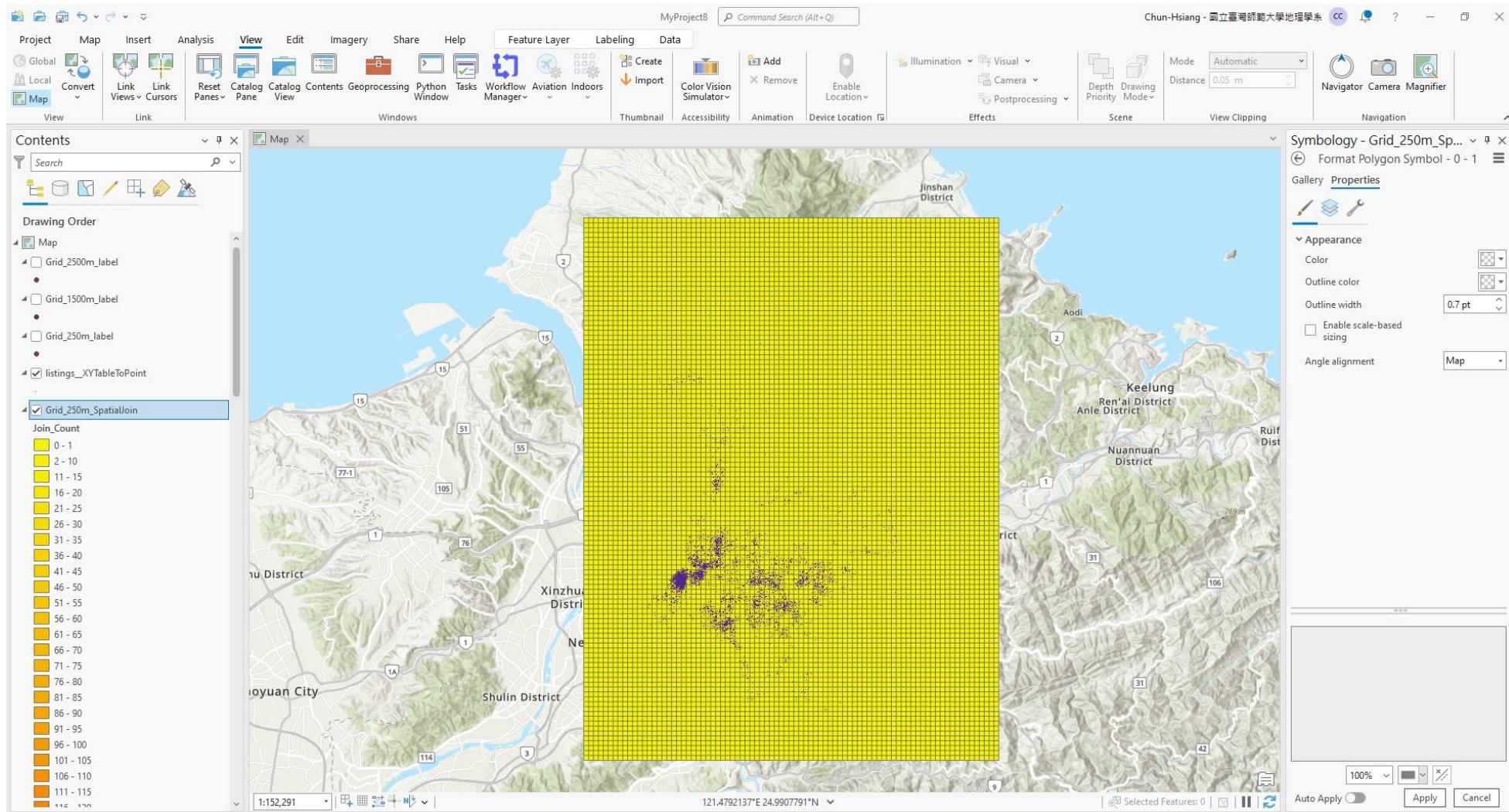
# Spatial Join for Counting Number of Airbnb Listings



# Symbology – Grid 250m

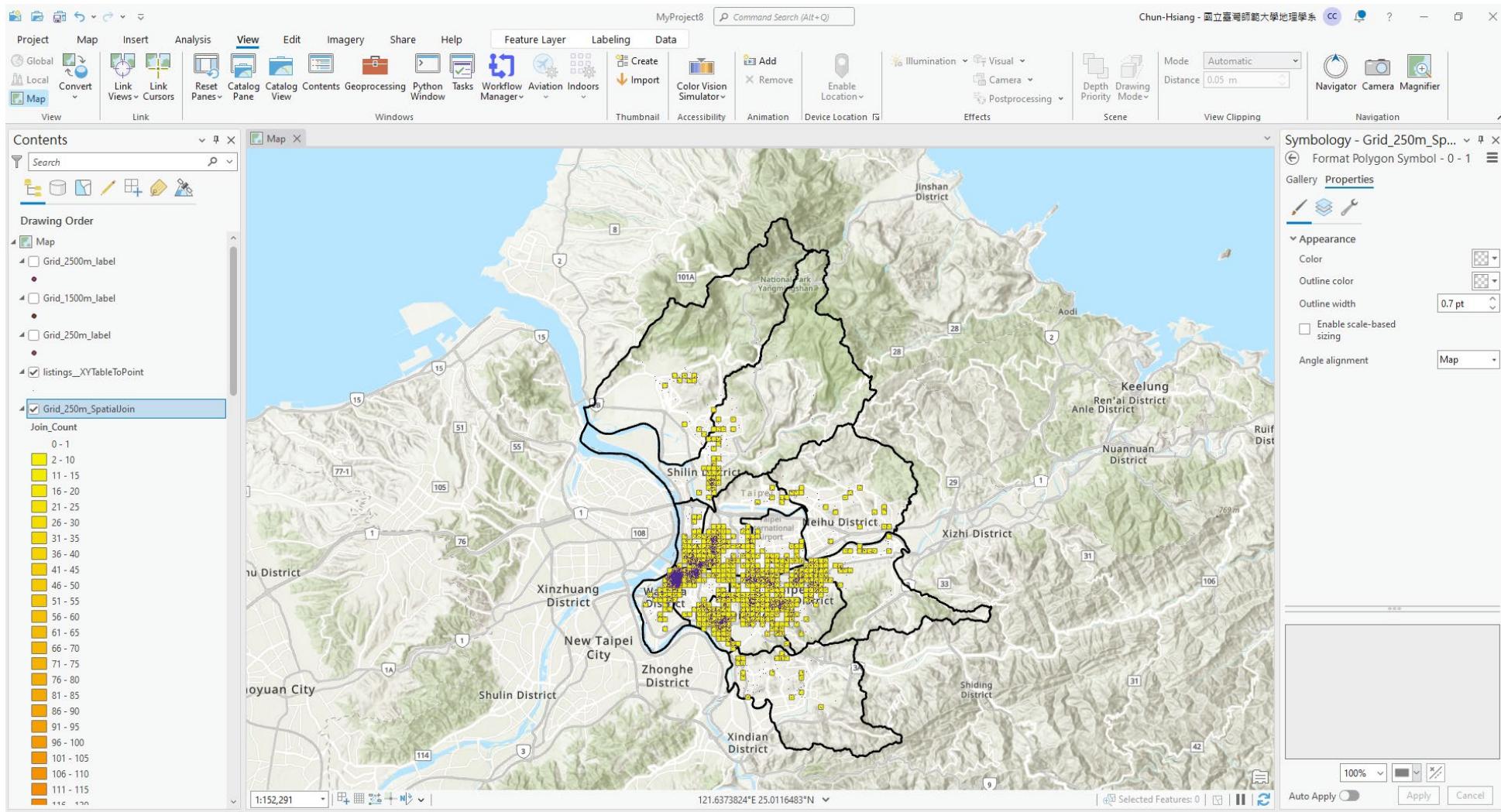


# Symbology – Grid 250m



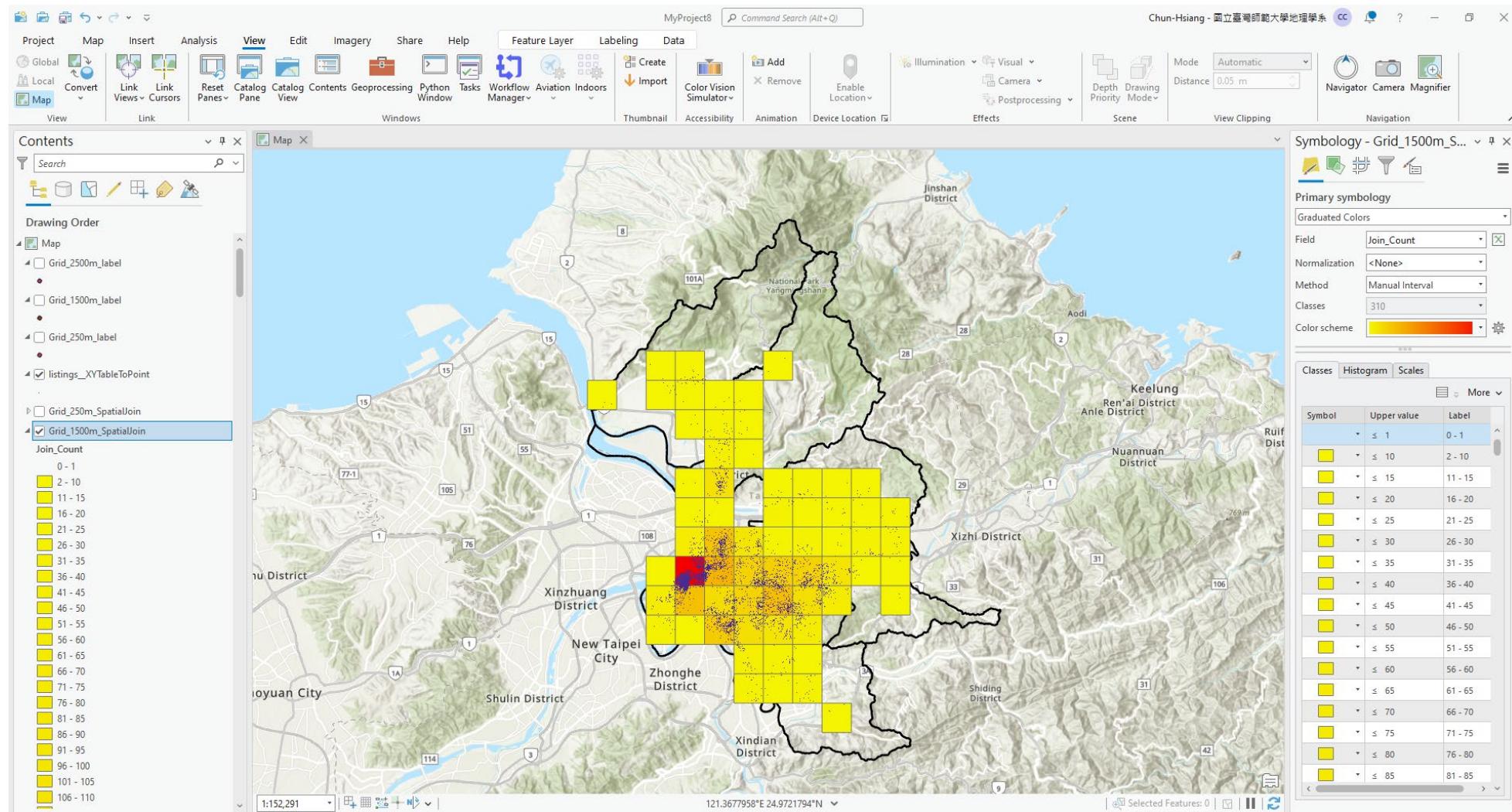
Screenshot

# Symbology – Grid 250m



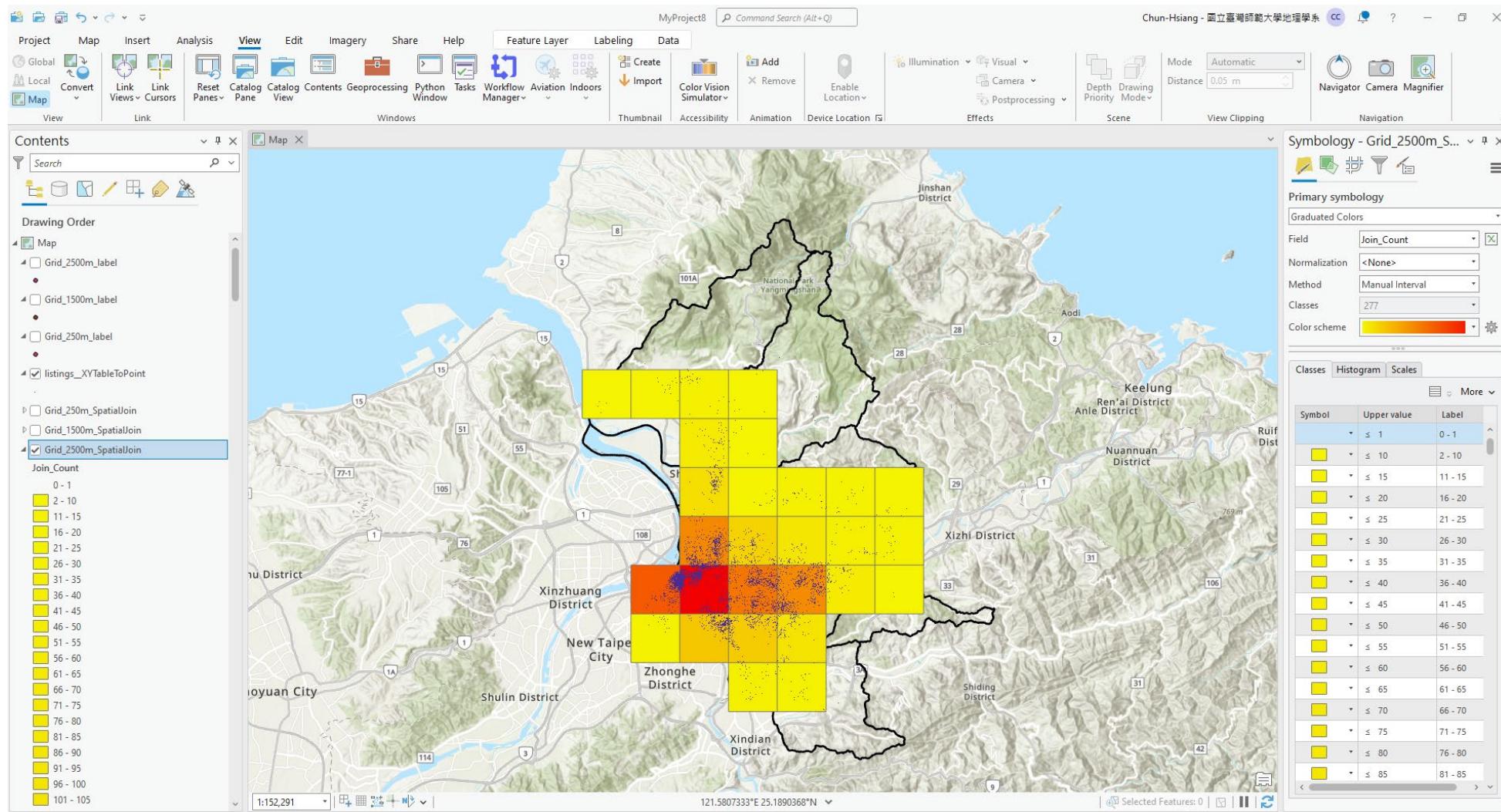
Screenshot

# Symbology – Grid 1500m



Screenshot

# Symbology – Grid 2500m



# MAUP Observation

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- How does the spatial distribution vary across the three different grid sizes?
- ...
- ...
- ...
- ...

The background of the slide is a satellite night map of North America, showing the distribution of city lights across the continent. The lights are represented by small yellow and white dots of varying sizes, indicating population density and urbanization. The map shows a dense concentration of lights along the coastlines and major river systems, with a more sparsely lit interior. The overall color palette is dark blue and black, with the glowing lights providing the primary visual information.

# The End

Thank you for your attention!

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